Executive Summary

B&P TUNNEL PROJECT

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation

EXECUTIVE SUMMARY

The Baltimore and Potomac (B&P) Tunnel Project (“Project”) considers the rehabilitation or replacement of a 1.4-mile long rail tunnel located along the Northeast Corridor (NEC) in Baltimore, Maryland. The B&P Tunnel is owned by the National Railroad Passenger Corporation (Amtrak) and used for Regional and Acela intercity rail passenger trains, Maryland Area Rail Commuter (MARC) passenger trains, and Norfolk Southern Railway (NS) freight trains.

This Final Environmental Impact Statement (FEIS) summarizes the alternatives evaluation from the Draft Environmental Impact Statement (DEIS), including review of the alternatives, their ability to meet the Purpose and Needs of the Project, and their potential impacts to the social, cultural, and natural environment. This FEIS also identifies a Preferred Alternative, provides a detailed description and evaluation of the Preferred Alternative, provides rationale for the Preferred Alternative, and describes potential mitigation measures to address the documented environmental impacts of the Preferred Alternative. The FEIS also provides rationale for the elimination of alternatives in the DEIS. The Federal Railroad Administration (FRA), as the lead federal agency, and the Maryland Department of Transportation (MDOT) prepared the document in accordance with the National Environmental Policy Act, 42 U.S.C. § 4321 *et seq.* (NEPA). The Federal Transit Administration (FTA) is involved with the development of the Project through the NEPA process as a cooperating agency in accordance with the Council on Environmental Quality (CEQ) regulation 40 CFR 1508.5.

A. Overview of the NEPA Process

This FEIS is a milestone within the NEPA process for the Project. This FEIS provides a description of the Preferred Alternative and presents environmental impacts and proposed mitigation measures. This FEIS also documents the Purpose and Need for the Project, background information on the Project, a description of the affected environment in the Study Area, a summary of the alternatives development process, and information on the public involvement and agency coordination that has occurred since the DEIS. Technical reports prepared for the Project were coordinated with the public throughout the development of the Project and are available on the Project website at www.bptunnel.com.

Subsequent to the DEIS, the Project sponsors conducted three Public Hearings to receive public input and comments on the DEIS. This FEIS includes all of the comments received during the DEIS comment period, including testimony from the Public Hearings, and a response to each comment. Following the Public Hearing and comment period for the DEIS, FRA, in coordination with MDOT and Amtrak, identified a Preferred Alternative for the Project. The Preferred Alternative is Alternative 3B, as refined since the DEIS and described in this FEIS. The identification of the Preferred Alternative is based on an assessment of how the Preferred Alternative meets Purpose and Need; an assessment of rail operations, engineering, transportation, cost, construction; an assessment of all environmental impacts; and public and agency comments received.

The Record of Decision (ROD) is the final step in the NEPA process. FRA will issue the ROD as the decision document for the selected alternative for the Project. The ROD will be issued no earlier than 30 days after the FEIS Notice of Availability.

B. Project Background

The existing B&P Tunnel is located beneath West Baltimore in the vicinity of the neighborhoods of Bolton Hill, Madison Park, Reservoir Hill, Sandtown-Winchester, Upton, and others as shown in **Figure ES-1**. The existing tunnel is currently used by Amtrak, MARC, and NS. Built in 1873, the existing tunnel is one of the oldest structures on the NEC. It is approximately 7,500 feet (1.4 miles) long, and is comprised of three tunnels separated by two,

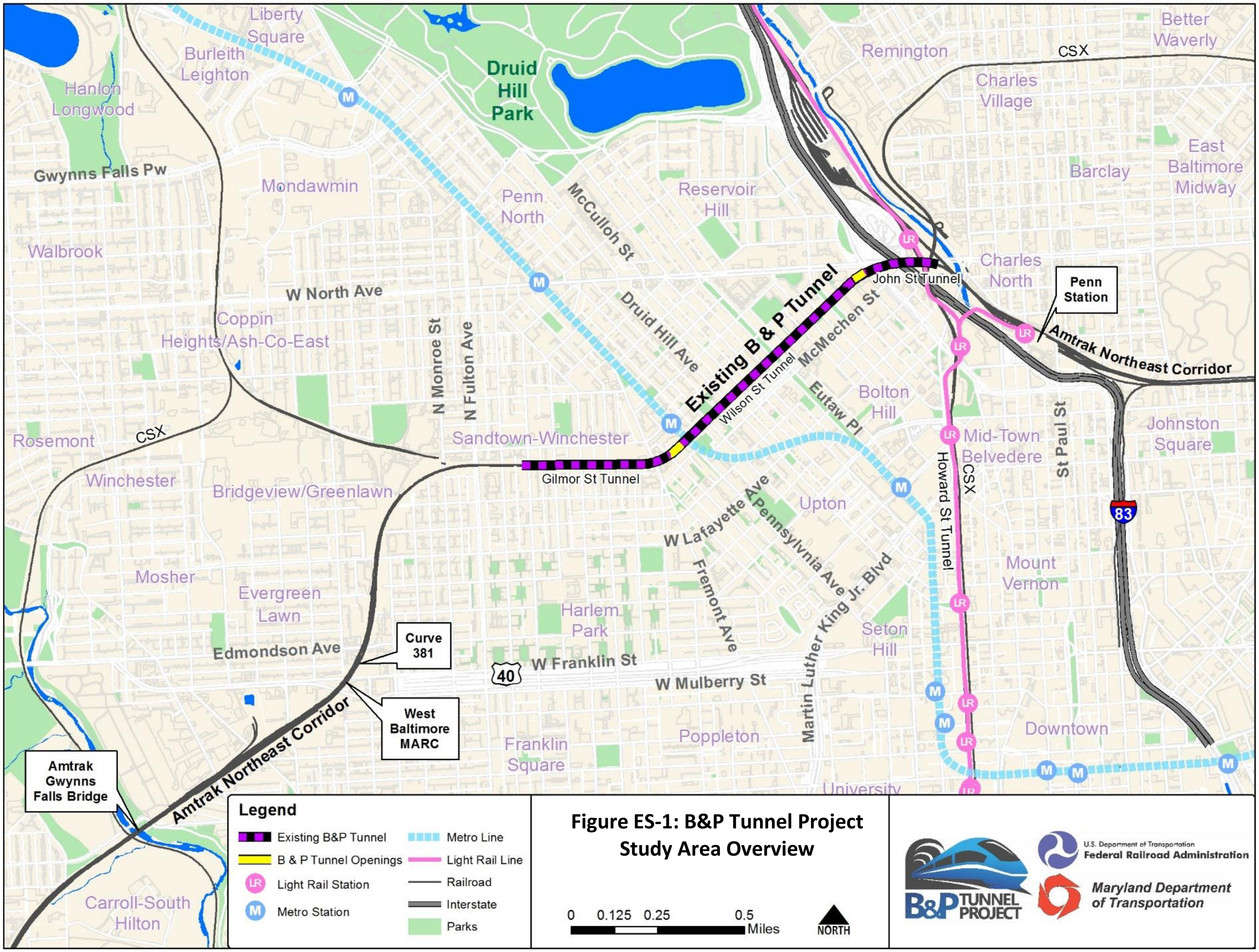

Figure ES-1: B&P Tunnel Project Study Area Overview short, open-air sections. The tunnel was originally constructed with brick and stone masonry; repairs have added additional building materials over time. The tunnel was rehabilitated in the 1980s, and continuing repairs are required to maintain the structures.

The existing tunnel is a crucial link in the greater NEC, which runs through eight states and Washington, DC. The NEC is the nation's most congested rail corridor, and one of the highest volume corridors in the world. The NEC moves over 259 million passengers and 14 million car miles of freight cargo each year. The NEC is principally owned and maintained by Amtrak, and used by eight commuter rail operators and four freight railroads.

C. Purpose and Need

The purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, including: to reduce travel time through the B&P Tunnel and along the NEC; to accommodate existing and projected travel demand for intercity and commuter passenger services; to eliminate impediments to existing and projected operations along the NEC; and to provide operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

The need for the Project has been identified based on the following issues related to the B&P Tunnel:

- The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the tunnel currently remains safe for rail transportation, it requires substantial maintenance and repairs and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands due to the combination of its vertical and horizontal track alignment, i.e., its grades and curves. The low-speed tunnel creates a bottleneck at a critical point in the NEC, affecting operations of the most heavily traveled rail line in the United States.
- The existing B&P Tunnel does not provide enough capacity to support existing and projected demands for regional and commuter passenger service along the NEC.
- The existing B&P Tunnel is not suited for modern high-speed usage due to the current horizontal and vertical track alignments, which limit passenger train speeds through the tunnel to 30 mph.
- The existing B&P Tunnel is a valuable resource. The disposition of the existing tunnel needs to be considered in the Project.

D. Alternatives Development

This FEIS includes a detailed evaluation of the Preferred Alternative (Alternative 3B), shown on **Figure ES-2**. The FEIS also includes information on three other alternatives: Alternative 1: No-Build, Alternative 3A, and Alternative 3C, which are also shown on **Figure ES-2**. These alternatives were retained through a comprehensive alternatives development and evaluation process that incorporated input from the public, as well as federal, state, and local government agencies. The alternatives development and evaluation process identified 16 Preliminary Alternatives as show in **Table ES-1**.

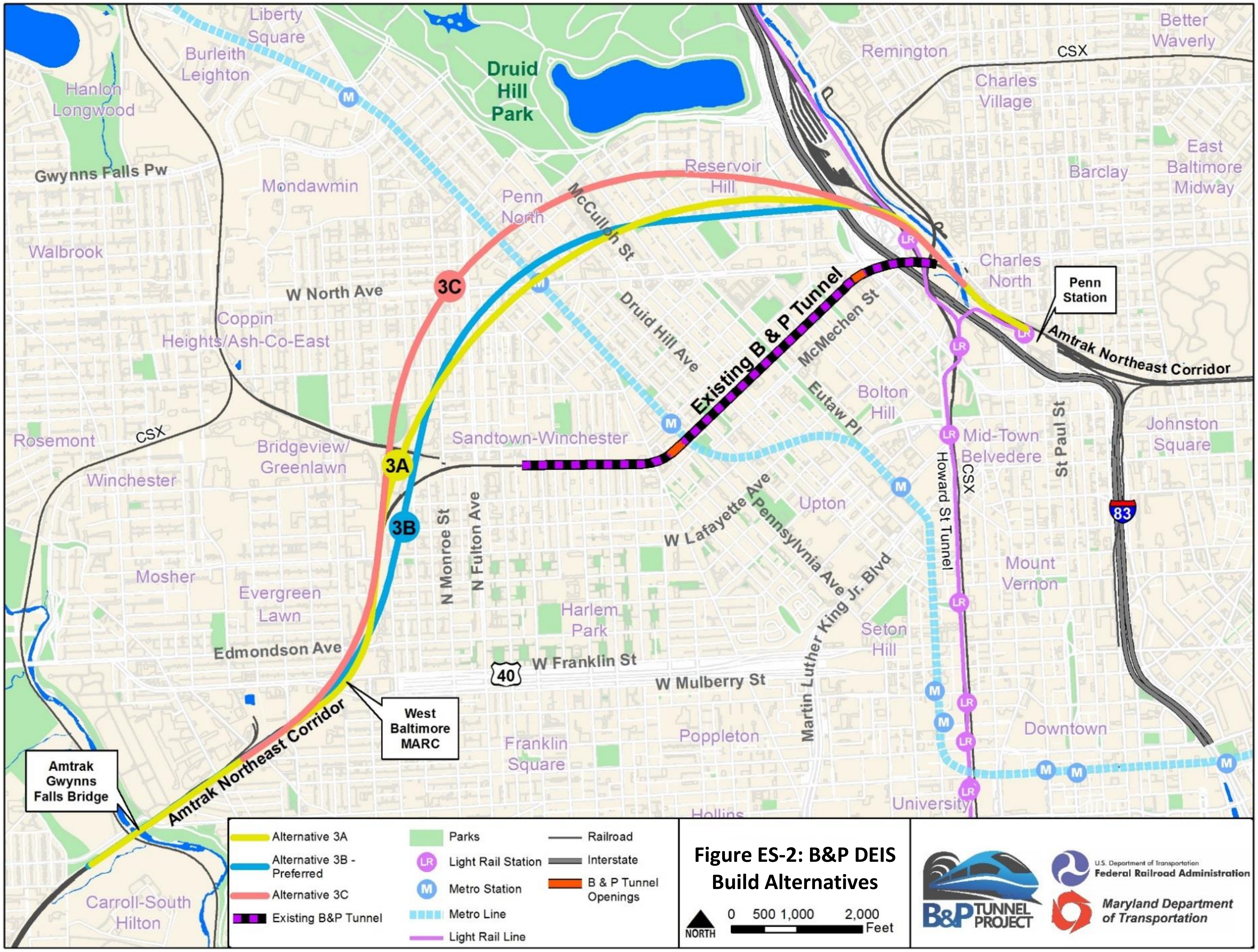

Figure ES-2: B&P DEIS Build Alternatives

Table ES-1: B&P Tunnel Project Preliminary Alternatives

Alternative 1: No-Build	Alternative 2: Restore/Rehabilitate Existing B&P Tunnel
Alternative 3: Great Circle Passenger Tunnel	Alternative 4: Presstman Street
Alternative 5: Route 40	Alternative 6: Locust Point
Alternative 7: Sports Complex	Alternative 8: Wilson Street – Existing Tunnel
Alternative 9: Mosher Street North	Alternative 10: Mosher Street South
Alternative 11: Robert Street South	Alternative 12: Robert Street North
Alternative 13: Wilson Street – Under Existing Tunnel	Alternative 14: North Avenue Bridge
Alternative 15: Gilmor Street – Existing Tunnel	Alternative 16: North Avenue Tunnel

These 16 alternatives were evaluated in a Preliminary Screening Analysis that resulted in four Alternatives remaining (Alternatives 1, 2, 3, and 11) based on environmental impacts, public comments, and the degree to which each alternative met the Project Purpose and Need. This process is documented in the *Preliminary Alternatives Screening Report*.

Alternatives 1, 2, 3, and 11 were further refined to include options for Alternatives 3 and 11 for a total of seven Alternatives: 1, 2, 3A, 3B, 3C, 11A, and 11B. These seven Alternatives were compared and evaluated, and Alternatives 2, 11A, and 11B were eliminated. The documentation of this step in the process can be found in the B&P Tunnel *Alternatives Report*.

Alternatives 1, 3A, 3B, and 3C were assessed in detail in the DEIS. In response to public and agency input subsequent to the publication of the DEIS, Alternatives 3A, 3B, and 3C were revised to reduce potential environmental impacts and address community concerns.

1. Alternative 1: No-Build

Alternative 1: No-Build serves as the baseline for analysis of the build alternatives. It entails continued use of the existing B&P Tunnel with no significant improvements aside from routine maintenance. Alternative 1 would not meet the Purpose and Need for the Project, but is retained as the baseline for comparison with the build alternatives.

2. Alternatives 3A, 3B, and 3C

Alternatives 3A, 3B, and 3C (build alternatives) would provide a tunnel in an arc north of the existing B&P Tunnel. The wide, continuous arc allows trains to travel at higher speeds compared to the existing NEC alignment. Each of the three build alternatives propose tracks in four separate tunnel bores extending between the north and south portals. The track alignments would remain below ground until exiting through the tunnel portals, where the tracks would transition back to the surface. Alternatives 3A, 3B, and 3C would each involve open cut and cut-and-cover sections to bring the tracks to the surface after exiting the portals. Tracks would pass through the portals then through a cut-and-cover section, followed by an open cut (trench) section prior to connecting with the existing NEC alignment.

From an engineering standpoint, Alternatives 3A, 3B, and 3C:

- Have identical maximum and minimum design speeds;
- Have similar tunnel depths and vertical grades;
- Provide universal interlocking to the NEC mainline;

- Avoid MTA's Metro Subway tunnel;
- Service the West Baltimore MARC Station and Baltimore Penn Station;
- Include four tracks in four separate tunnel bores, and each includes "duck under" alignments to permit conflict-free operations; and
- Require a ventilation facility near each portal and at an intermediate point along the tunnel.

Alternatives 3A, 3B, and 3C differ from one another primarily with regard to the location and impact of the south portal, and their impact to the existing West Baltimore MARC Station. Alternative 3A allows the existing West Baltimore MARC Station to remain in its current location. As a separate project, the MTA studied how to rebuild the station to accommodate high-level platforms several hundred feet south of the existing station and parking lots. Alternatives 3B and 3C would require the demolition of the existing station and reconstruction of a new West Baltimore MARC Station as part of the Project in the same location as the existing station. Alternative 3A is distinct from Alternative 3B and Alternative 3C in that Alternative 3A, while resulting in fewer community impacts, would underperform relative to Alternative 3B and Alternative 3C in meeting the Project Purpose and Need. Alternative 3A would not reduce the curvature along Curve 381, the existing curve along which the West Baltimore MARC Station is located, and thus would not reduce travel times as much as Alternatives 3B or 3C.

Following the publication of the DEIS, FRA in coordination with MDOT and Amtrak, made engineering refinements to the build alternatives as follows:

- Minor refinements were made to the alignment of Alternative 3A including narrowing the track spacing near the south portal approach, which entailed only slight adjustments to the alignment presented in the DEIS. A corresponding narrowed limits of disturbance was generated to more accurately define impacts.
- Refinements were made to Alternative 3B. The south portal approach track spacing was narrowed, and the alignment shifted west of the existing right-of-way in the vicinity of Franklin and Mulberry Streets. These shifts result in an alignment that stays closer to the existing right-of-way, with reduced overall impacts. A corresponding narrower limits of disturbance was generated to more accurately define impacts.
- Minor refinements to Alternative 3C were made since publication of the DEIS. A narrower limits of disturbance was generated to more accurately define the impacts, and narrower track spacing was included in the south portal area.

Refinements to Alternative 3B have reduced the number of residential displacements from 46 to 22, reduced business displacements from nine to six, and reduced community facility displacements from five to four. These refinements have also reduced the number of contributing historic elements that would be demolished from 51 to 30, and reduced the right-of-way impacts from 17.1 to 13.2 acres including right-of-way within minority and low-income areas. However, even with the net reduction in residential displacements, some residential displacements would occur with the refined Alternative 3B that were not identified in the DEIS. **Chapter VI** of the FEIS identifies the location of these residential displacements.

Table ES-2 summarizes key comparisons between Alternatives 3A, 3B, and 3C.

Table ES- 2: Comparison of Key Criteria for Alternatives 3A, 3B (Preferred) and 3C

	Alternative 3A	**Alternative 3B (Preferred)**	**Alternative 3C**
Travel Time Savings over No-Build (Min:Sec average of northbound and southbound)	Acela: 2:00 Regional: 1:55 MARC: 1:38	Acela: 2:31 Regional: 2:32 MARC: 1:49	Acela: 2:30 Regional: 2:23 MARC: 1:44
Allows for high-level platforms for West Baltimore MARC Station between Franklin and Mulberry Streets	No	Yes	Yes
Capital Cost* (Year of Expenditure $)	$3.8 billion	$4.0 billion	$4.2 billion
Ward Baking Company (historic resources)	Preserved	Preserved	Demolished
Fire Department Engine Company No. 36 (historic resource)	Preserved	Preserved	Demolished
P. Flanigan & Sons, Inc. business and jobs	Substantial Impact	Minimal Impact	Substantial Impact
Surface right-of-way required	9.4 acres	13.2 acres	15.1 acres

*Note: does not include Intermediate Ventilation Facility or mitigation cost. See **Chapter IV** for more detailed cost estimate of the Preferred Alternative.

E. Preferred Alternative

Subsequent to the publication of the DEIS, in December 2015, the three Public Hearings on the DEIS, and end of the comment period for the DEIS, FRA, in coordination with MDOT and Amtrak, identified a Preferred Alternative for the Project. The identification of the Preferred Alternative is based on the following: an assessment of how the Preferred Alternative meets Purpose and Need; an assessment of rail operations, engineering, transportation, cost, and construction; an assessment of all environmental impacts; and all public and agency comments received.

The Preferred Alternative for the Project is Alternative 3B. **Chapter IV** provides a detailed description of the alternative including details such as the alignment, ventilation facilities, egress facilities, construction methods, and other features.

Alternative 3B is identified as the Preferred Alternative because of its superior ability to meet the Project's Purpose and Need while minimizing environmental impacts to the extent possible in comparison with each of the other alternatives evaluated in this FEIS. This section summarizes how Alternative 3B compares to Alternative 1: No-Build, Alternative 3A, and Alternative 3C relative to the Project Purpose and Need, environmental impacts, rail operations and engineering, and other important considerations such as cost.

1. Comparison of Preferred Alternative to Alternative 1: No-Build

Alternative 3B is superior to the No-Build because it effectively meets the Project's Purpose and Need. While there would be no environmental impacts resulting from the No-Build Alternative, the alternative would not address pressing infrastructure issues on Amtrak's NEC characterized in the Project Purpose and Need. Alternative 3B would address every component of the Project Purpose and Need, as described in **Chapter II**.

2. Comparison of Preferred Alternative to Alternative 3A

While Alternative 3A would generally result in fewer environmental impacts relative to Alternative 3B (the Preferred Alternative), it would not provide the same key benefits that Alternative 3B would provide. Alternative 3A's key disadvantages stem from its inability to improve Curve 381 which lies at the location of the West Baltimore MARC Station. Because Alternative 3A would retain Curve 381, it would not improve travel times to the same degree as Alternative 3B and would not improve accessibility at the West Baltimore MARC Station.

Alternative 3A would result in an average travel time savings of 2:00 (minutes: seconds) over the No-Build for Amtrak Acela service, compared to 2:31 for Alternative 3B. Additionally, because Alternative 3A would retain existing Curve 381, it would not allow for provision of high-level platforms at the West Baltimore MARC Station at its current location due to the existing curvature. Alternative 3B, on the other hand, would allow for a high-level West Baltimore MARC platform to be constructed at the station's current location between Franklin and Mulberry Streets by flattening Curve 381. From a transportation perspective, a MARC station at its current location is superior to moving the station south. Furthermore, the improvements under Alternative 3A would effectively preclude any future improvements to Curve 381, limiting travel speeds and precluding high-level platforms through the curve for the life of the tunnel.

3. Comparison of Preferred Alternative to Alternative 3C

Unlike Alternative 3A, Alternative 3C includes some of the key advantages of Alternative 3B (the Preferred Alternative) in meeting the Project Purpose and Need. It would improve Curve 381, thus improving travel times and allowing for accessible high-level platforms at the West Baltimore MARC Station. However, Alternative 3C would result in more detrimental overall environmental impacts compared to Alternative 3B, particularly in regards to historic properties.

Alternative 3C would require demolition of the Ward Baking Company building and the Fire Department Engine Company No. 36 building, two important historic properties located in the south portal vicinity. The Section 106 Consulting Parties, in consultation with FRA, have expressed a strong preference for preservation of these buildings. Alternative 3B, in contrast, would avoid demolition of the Ward Baking Company and Fire Department Engine Co. 36 buildings.

Alternative 3C would require demolition of an estimated 12 residences, which is fewer than the estimated 22 residential demolitions for Alternative 3B. However, Alternative 3C would require 16 business impacts, including major impacts to the P. Flanigan & Sons asphalt plant (a major local employer), while Alternative 3B has only minor impacts to the P. Flanigan & Sons property and 13 total business impacts.

In summary, Alternative 3C would meet the Project's stated Purpose and Need to a similar degree as Alternative 3B. When all of the impacts described above and in **Chapter VI** are taken into account, despite the advantage of having fewer residential displacements, the overall environmental impacts from Alternative 3C are more severe than Alternative 3B.

4. Ventilation Facilities

Each of the build alternatives would require three ventilation facilities to ensure proper ventilation of the proposed tunnels. One ventilation facility would be located near the north portal, one would be near the south portal, and one Intermediate Ventilation Facility would be located to facilitate ventilation proximate to the middle of the tunnels between the two portals. The Intermediate Ventilation Facility site is located along West North Avenue in the Reservoir Hill neighborhood at 900-940 West North Avenue. The site previously identified in the DEIS, located at Whitelock Street at Brookfield Avenue, is not recommended at this time based on community input and consideration of impacts. Project mitigation efforts will consider community preferences in site design.

5. Future of the Existing B&P Tunnel

The existing B&P Tunnel is a functioning railroad structure connecting Baltimore Penn Station with the NEC. Under the Preferred Alternative, the existing tunnel would be closed and reserved for potential future rail transportation use. The tunnel would be maintained in a safe condition. No immediate plans for rail service through the existing tunnel are included as part of the Preferred Alternative, but such use would not be precluded for the future.

F. Affected Environment and Environmental Consequences

The build alternatives would impact the human and natural environment. This section describes existing environmental conditions in the Study Area and compares the environmental consequences of the Preferred Alternative, Alternative 3A, and Alternative 3C to this baseline. Because Alternative 1: No Build would involve no changes to the existing B&P Tunnel alignment aside from required maintenance, no environmental impacts would occur under Alternative 1. Generally, because the majority of the alignments are below ground, impacts would occur at the tunnel portals, along the above-ground sections of new tracks (trackways), and at the Intermediate Ventilation Facility location.

1. Socioeconomics

a. Land Use

The majority of the Preferred Alternative alignment would be bored approximately 100 feet below the existing surface. As a result, surface land use impacts would be minimized and restricted to primarily portal and ventilation facility locations. The Preferred Alternative would displace an estimated 22 residential properties in the Midtown-Edmonson and Rosemont neighborhoods, approximately five of which are currently vacant. Property acquisition activities, including relocations, would be performed in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) and all applicable state laws. Six business displacements would result from construction of the south portal for the Preferred Alternative, and an additional seven would result from the 900-940 West North Avenue Intermediate Ventilation Facility site.

b. Environmental Justice

The FEIS assesses the impacts of the Preferred Alternative to minority and low-income populations as compared to the No-Build. The Preferred Alternative would have high and adverse impacts to these properties in the following areas: property acquisition, housing displacement, land use/zoning, visual quality, community facilities, and noise. Measures that would mitigate the severity of these potential effects are included in this FEIS.

The Project Team engaged extensively with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held with the public; local officials; public, local, and regional organizations; government agencies; and representatives of affected Environmental Justice communities along the evaluated alternative alignment. Three public open houses and ten community meetings were held where the public was given the opportunity to learn about the Project development in-person, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings.

Mitigation measures were developed in cooperation with community groups and individual community members, and would continue to be developed during Project design and construction. Mitigation measures would include support of community development and infrastructure projects for affected communities as detailed in **Section G** and **Chapter VII**.

c. Transportation

Transportation infrastructure in the Study Area includes the NEC, MARC commuter rail service, MTA Light Rail and Metro Subway services, the roadway network, and local bus service. While the Project could create short-term impacts to the operation of existing streets, long-term impacts would be minimal.

The Preferred Alternative would require reconstruction of the West Baltimore MARC Station in order to align with the new trackway. The reconstructed MARC Station would remain in the same location between Franklin and Mulberry Streets and adjacent to existing parking facilities. Rail services would be maintained during construction. Reconstruction of the West Baltimore MARC Station under the Preferred Alternative would allow for the provision of high-level platforms at the station, resulting in increased accessibility and Americans with Disabilities Act (ADA) compliance.

d. Neighborhoods and Community Facilities

The Study Area neighborhoods reflect the typical character of older, established urban areas, with historic architecture, highly trafficked pedestrian spaces, busy thoroughfares, and quieter residential streets. The neighborhoods are primarily residential, composed mainly of single-family attached rowhomes and several garden apartment complexes. The Study Area features a variety of commercial and industrial businesses, such as convenience stores, bar/restaurants, clothing retail, and automotive care, located along the main thoroughfares of North Avenue and Pennsylvania Avenue. The Study Area contains a wide range of community facilities and public services that are locally oriented and serve the region, including churches and other places of worship, cemeteries, schools, libraries, and parks. Under the Preferred Alternative, four places of worship would be displaced.

2. Cultural Resources

Impacts to cultural resources were assessed within an Area of Potential Effects (APE), which is the geographic area within which the Project may directly or indirectly alter the character or use of historic properties.

a. Historic Architecture

Seventeen historic properties were identified within the APE. Project effects were determined by applying the Section 106 criteria of adverse effect (36 CFR 800.5). While the No-Build Alternative would have no effect to historic properties, the Preferred Alternative would have an adverse effect to nine historic properties. FRA received concurrence on the effects determination on November 20, 2015 from the Maryland Historical Trust, which serves as the Maryland State Historic Preservation Officer (SHPO). Mitigation for these adverse effects is described in a draft Programmatic Agreement (PA) included in **Appendix H**.

b. Archaeology

An archaeological assessment of the Study Area consisted of background research on the history of the area and previously identified archaeological site within a one-mile radius. Given the severity and extent of past disturbance, most of the land within the APE is considered to have a low probability of containing any intact prehistoric archaeological resources. However, extensive areas of historic fill exist within the study corridors. Under certain circumstances, land filling has been instrumental in the protection of historic archaeological deposits; therefore, the potential for both pre- and post-contact archaeological sites still exists. More detailed archaeological impact studies will proceed in coordination with the SHPO and consulting parties at a later phase of the Project, as described in the draft PA.

3. Section 4(f) Evaluation

Section 4(f) of the US Department of Transportation Act of 1966 (49 USC 303(c)) is a federal law that protects publicly-owned parks, recreation areas, wildlife and/or waterfowl refuges, or any significant historic sites, whether privately or publicly owned (collectively, Section 4(f) properties).

According to federal law, FRA may only approve use of Section 4(f) properties if there is no prudent and feasible alternative that completely avoids the use of Section 4(f) properties and the project includes all possible planning to minimize harm to the Section 4(f) property. FRA may determine that a project has a *de minimis* impact on a Section 4(f) property and thus not a use of the property if the project will have no adverse impact on the Section 4(f) property and the agency with jurisdiction over the park or the SHPO concurs after consulting with interested parties. If FRA determines that there is no feasible and prudent avoidance alternative, then FRA may approve, from among the alternatives that use Section 4(f) properties, only the alternative that causes the least overall harm.

The Preferred Alternative would result in potential use of nine Section 4(f) properties, and an additional three *de minimis* impacts. The Preferred Alternative would require demolition of 27 historic buildings or other contributing elements to the Midtown-Edmondson Historic District, five historic buildings contributing to the Greater Rosemont Historic District, two buildings contributing to the Edmonson Avenue Historic District, and one building contributing to the Reservoir Hill Historic District. Some of the impacted elements contribute to more than one historic district. The four districts together have a total of 30 contributing historic elements that would be demolished, and an additional 54 contributing elements would be impacted but not demolished. Resources contributing to the B&P Railroad would also be modified or demolished.

No feasible and prudent avoidance alternatives were identified in this Section 4(f) Evaluation. FRA has incorporated all possible planning to minimize harm to Section 4(f) properties into the Preferred Alternative. “All possible planning” includes all reasonable measures to minimize harm and mitigate adverse impacts and effects. The Preferred Alternative has been designed to minimize harm, including minimization measures such as shifts to the alignment, narrowed track spacing, and a relocated Intermediate Ventilation Facility. Mitigation measures have been included in the draft PA and are intended to be implemented as mitigation for impacts to historic properties resulting from the Preferred Alternative. FRA has identified the Preferred Alternative as the alternative with least overall harm upon considering a balance of the factors outlined in 23 CFR Part 774.

4. Natural Resources

Natural resources in the Study Area were preliminarily identified based on a review of existing scientific literature, watershed reports, GIS databases, and mapping as well as field review. Identified resources include soils; streams and wetlands; floodplains; wildlife and habitat; threatened and endangered species; and street trees.

a. Soils

The Preferred Alternative would remove large quantities of soil and rock through tunnel boring and cut-and-cover construction. Construction areas would also expose the soil surface in portal and ventilation shaft locations, requiring stabilization to limit surface runoff and sediment pollution to surface waters.

b. Streams and Wetlands

No streams or wetlands would be affected by the Preferred Alternative. The Preferred Alternative would remain on existing structures over the Jones Falls and Gwynns Falls waterbodies. Minor impacts to water quality are possible from sediment and other construction-related runoff, but would be limited by required erosion and sediment control measures.

c. Floodplains

The Preferred Alternative would impact approximately 3.4 acres of the Jones Falls floodplain. No impact to the floodplain of the Gwynns Falls would occur.

d. Wildlife and Habitat

The Preferred Alternative would have minor impacts on wildlife and their habitat, since most of the Preferred Alternative will take place underground and ventilation facilities will primarily impact urban areas with little habitat value. Trees, hedgerows, and forest stands were identified within the Study Area. The Preferred Alternative would impact a total of approximately 106,400 SF of forest stands and 60,700 SF of hedgerow.

Street trees would be affected by the Preferred Alternative due to construction impacts near the tunnel portals and ventilation facilities. Approximately 74 street trees would be impacted within the south portal area. Approximately 17 street trees would potentially be impacted by the Intermediate Ventilation Facility at 900-940 West North Avenue.

e. Threatened and Endangered Species

No state or federally-listed threatened or endangered species are known to exist within the Study Area.

5. Hazardous Materials

The Preferred Alternative is expected to impact contaminated soil and groundwater during construction activities near contaminated sites. A total of 112 sites of concern were identified within one mile of the Preferred Alternative alignment. Eight sites of concern were identified within 500 feet of the Intermediate Ventilation Facility at North Avenue.

6. Solid Waste

The Preferred Alternative would generate large quantities of material from excavated soil and rock, street and sidewalk demolition, and building demolition. Between the re-use of some earthen material as fill and current land fill capacity, the disposal of generated solid waste by the Preferred Alternative would be managed. Any solid waste, including construction, demolition, and land clearing debris generated from the Preferred Alternative must be properly disposed of at a permitted solid waste acceptance facility. Thus, no substantial harmful impacts on the solid waste system would occur as a result of the solid waste created by the Preferred Alternative.

7. Air Quality

The Project location is in Baltimore City, Maryland, which is presently designated by the Environmental Protection Agency (EPA) as a moderate nonattainment area for eight-hour ozone and a maintenance area for carbon monoxide (CO) and particulate matter (PM) equal to or less than 2.5 micrometers in diameter (fine particulates or $PM_{2.5}$).

The Preferred Alternative would have no net increase in operational emissions exceeding applicable *de minimis* thresholds. The Preferred Alternative would result in no projected increase in diesel freight train operations, and no significant air emissions are generated by electric locomotive trains (e.g., Amtrak). Net increases in emissions would be due to diesel MARC trains. MARC equipment and operational changes would have no significant effects on air quality, as the net change in emissions of nitric oxide (NO_x), volatile organic compounds (VOC), and $PM_{2.5}$ between the 2040 No-Build and the 2040 Build Alternatives scenarios would be below *de minimis* levels. See **Chapter VI, Section H** for more information.

Emissions from construction activities were estimated in this FEIS. The total emissions associated with construction activities are below the *de minimis* threshold of 100 tons per year for NO_x and $PM_{2.5}$, and 50 tons per year for VOC. Therefore, a Conformity Determination is not required and the Project is presumed to comply with the State Implementation Plan (SIP).

Emissions dispersion modeling was used to evaluate the potential emissions from the ventilation facilities proposed under the Preferred Alternative. The maximum predicted 1-hour nitrogen dioxide (NO_2) concentration from all sources combined (three ventilation facilities as well as the north and south portals) was 12.8 parts per billion (ppb). When added to the NO_2 background concentration of 51 ppb, the total predicted 1-hour concentration amounted to 63.8 ppb, which is below the National Ambient Air Quality Standards (NAAQS) of 100 ppb. The ventilation facility designs for the Preferred Alternative were developed to ensure compliance with applicable air quality regulations.

The Preferred Alternative will develop and implement a Construction Emission Reduction Plan to include measures such as reducing equipment idling times, utilizing on-site storage to reduce truck haul trips, using low-emissions equipment and dust suppression measures, ensuring the contractor has knowledge of appropriate fugitive dust and equipment exhaust controls, and other measures.

8. Noise

Noise impacts are assessed based on land use categories and sensitivity to noise from transit sources defined in FTA's guidance manual, *Transit Noise and Vibration Impact Assessment*. The FTA noise criteria are delineated into two categories: moderate and severe impact. The moderate threshold defines areas where the change in noise is noticeable but may not be sufficient to cause a strong, adverse community reaction. The severe impact threshold defines the noise limits above which a significant percentage of the population would be annoyed by new noise. The level of impact at any specific site is established by comparing the predicted future noise level at the site to the existing noise level at the site. Noise impacts are expected from future operations and from construction.

Noise levels were calculated at discrete receptor locations along the railroad. The results were then compared to the FTA impact criteria to identify moderate and severe impacts. Based on current US Census data, a total of 437 persons are predicted to be impacted, of whom 141 are predicted to be severely impacted. The severe impacts are predicted at residential areas nearest the railroad between the West Baltimore MARC Station and the south portal. One school, the Mary Ann Winterling Elementary School, is predicted to be moderately impacted.

FTA's guidance states that noise mitigation should be considered for areas of severe impact, unless the project's location or alignment can be modified to eliminate the impact. Final design for the Preferred Alternative will include noise barriers to mitigate anticipated operational noise impacts. The implementation of noise barriers along the railroad right-of-way would be effective in reducing outdoor noise levels, within practical limits of cost and feasibility. The approximate locations of proposed noise barriers are included in **Chapter VI** and **Appendix A**.

Ventilation facilities would be designed to meet noise limits established in the Noise Regulation of the Health Code of Baltimore City of 50 dBA maximum. To be below this noise level, cylindrical or rectangular sound attenuators would be mounted directly to each fan or to the ductwork within the system. In addition, the building itself would partially shield noise generated within the interior of the ventilation facility. The proposed ventilation facilities would emit noise at approximately 45 dBA with attenuators installed.

Temporary noise impacts may occur during construction of the Project at residences and other sensitive receptors along the proposed Project. To reduce any construction noise impacts that may occur, the Project will develop and implement a Construction Noise Mitigation Plan.

9. Vibration

Compared to the original analysis conducted as part of the DEIS, the analysis for the FEIS applied additional adjustments based on new information collected since the DEIS. As a result, predicted impacts have changed due to changes in alignments and modeling assumptions.

Impacts from the Preferred Alternative due to ground-borne vibration from train passbys are not predicted to exceed the FTA *frequent* impact criteria for any land use. Levels under the Preferred Alternative due to ground-borne noise from train passbys are predicted to exceed the FTA *frequent* impact criteria at 444 residences and other FTA Category 2 land-uses and five Category 3 land-uses (institutional). More detailed vibration analysis and monitoring would occur during the final design stage.

Ground-borne vibration would be generated from construction activities from the Preferred Alternative, with potential impacts on surrounding areas near the proposed portals and above the proposed tunnels. Tunnel boring machine (TBM) tunneling would be used to bore the four primary train tunnels. Drill and blast excavation would be used to construct cross-passages, shafts and ancillary underground structures. TBM vibrations during construction would generally be between 0.04 and 0.2 inches per second, and thus are not likely to risk damaging buildings near or above the proposed tunnels. Humans may be able to sense the vibration from most of the TBM tunneling, typically for only a day or two as the TBM construction will be continuously moving. The range of peak particle velocity (PPV) estimated from TBM tunneling would be comparable to the vibration (but not the noise) of a truck traveling 20-30 feet away from an observer. The potential vibration effects resulting from tunnel blasting for cross passages, shafts, and ancillary underground structures was also assessed. No vibration levels would exceed 0.5 inches per second, the level at which damage is likely to occur to old residential buildings in poor condition. The PPVs would generally range between 0.07 to 0.4 inches per second. Such vibrations are likely to be barely perceptible to humans.

The Preferred Alternative will implement vibration control measures to mitigate the impacts predicted by modeling, to be developed during final design. Factors such as the level of impact, cost, and effectiveness of mitigation measures will be considered in determining control measures that will be included. All vibration control measures would need to be evaluated in more detail during final design when the track alignments are finalized. The Preferred Alternative will also develop a Construction Vibration Mitigation Plan during the final design phase in order to mitigate for construction vibrations.

10. Construction Impacts

Construction of the tunnels for the Preferred Alternative would primarily involve horizontal mining with a TBM. The outside approaches, sloping down to the portals, would be built with a combination of trench cutting and cut-and-cover construction techniques.

Cut-and-cover construction requires removal of everything on the surface above the tunnel, excavating a trench in which the tunnel structure is constructed, and restoring the ground cover. Horizontal excavation by mining involves boring at a portal where the alignment would transition from surface to underground and excavating horizontally; surface disturbance would only occur at the approaches to the portals on either end of the tunnel and for ancillary structures such as emergency exits. Ancillary structures, such as ventilation tunnels and shafts or emergency egress, could be mined in a combination of mechanical excavation and controlled blasting.

Construction impacts associated with construction of the Preferred Alternative would include localized impacts at the mucking shaft and portal cut-and-cover locations; emissions and dust from construction vehicles; blasting noise and vibration near tunnel portal and ventilation shaft locations; temporary interruptions to vehicular and pedestrian traffic and temporary loss of on-street parking; and major utility relocations. Construction staging areas would be located in close proximity to the portals and vent facilities, either within the limits of disturbance or existing Amtrak right-of-way.

The Preferred Alternative will implement a series of mitigation plans during construction to minimize potential temporary construction impacts. The construction mitigation plans identified in this FEIS include a Maintenance of Traffic Plan, Hazardous Spill Prevention Plan, Materials Remediation Plan, Erosion and Sediment Control Plan, Construction Noise Mitigation Plan, Construction Vibration Mitigation Plan, Construction Emission Reduction Plan, Rodent Abatement Plan, and Stormwater Management Plan.

11. Indirect and Cumulative Impacts

Federal agencies are required to consider the potential for indirect and cumulative effects (ICE) from a proposed project. The ICE analysis was completed using available information on past, present and foreseeable future development, as well as readily available data from published plans and studies. The ICE analysis geographic boundary was developed using the boundaries of environmental resources and socioeconomic units that would be directly and indirectly impacted by the Project. The temporal boundaries for the ICE analysis generally extend from approximately 1970 to 2040. Planned improvements and developments within the ICE analysis area are used to qualitatively analyze potential for indirect and cumulative effects.

a. Indirect Impacts

The Preferred Alternative could potentially result in indirect effects. The Preferred Alternative could increase throughput capacity for freight traffic through the Study Area, though no increases in freight traffic are anticipated. The Preferred Alternative could indirectly result in changes in land use, population density, or growth rate in the city, but any effects would likely be relatively minor. Construction of a ventilation facility building in the Reservoir Hill neighborhood would permanently preclude future development at the selected site. The Preferred Alternative could have indirect community impacts resulting from conversion of residential areas in the Midtown-Edmondson, Bridgeview-Greenlawn, Reservoir Hill and Rosemont neighborhoods to transportation use; however, the Preferred Alternative would also result in a beneficial indirect effect to transportation as a result of downstream improvements to the efficiency of passenger rail service along sections of the NEC north and south of Baltimore. Indirect effects could also include changing travel behavior if travelers shift from automobile, air travel, and bus to passenger rail.

b. Cumulative Impacts

Vacant building demolitions, which are unrelated to the Project, are planned under Project CORE (Creating Opportunities for Renewal and Enterprise). These demolitions are likely located in close proximity to the demolitions required by the Preferred Alternative, resulting in a potential cumulative impact to residences and historic buildings near the proposed south portal. The Preferred Alternative would have community impacts such as displacements, noise, visual impacts, and loss of street connectivity that are similar to and adjacent to prior highway project impacts. These cumulative impacts would occur in areas identified as low-income and/or minority population areas. A review of master plans and planned development projects in the area does not indicate any other projects or plans that would result in impacts or land use changes similar in nature to those resulting from the proposed build alternatives.

The Preferred Alternative, along with planned projects along the NEC, would provide beneficial improvements to regional and high-speed rail service. The Preferred Alternative would contribute to cumulative improvements in travel times, improve reliability and safety, increase capacity, and allow for more high-speed travel.

12. Comparison of Intermediate Ventilation Facility Sites

The preferred Intermediate Ventilation Facility site is at 900-940 West North Avenue. The environmental impacts included in this document for all the build alternatives throughout **Chapter VI** account for impacts from the preferred site. Environmental impacts were also assessed in this FEIS for two other sites, located at 850 West North Avenue and Whitelock Street at Brookfield Avenue. The site at 900-940 West North Avenue would displace an estimated seven businesses currently located at the site. No business displacements would occur from the

850 West North Avenue or Whitelock Street at Brookfield Avenue site. The 850 West North Avenue site is currently a vacant housing complex. The Whitelock Street at Brookfield Avenue site is currently a portion of the Whitelock Community Farm.

An Intermediate Ventilation Facility located at the Whitelock Street at Brookfield Avenue site would be less compatible with the surrounding residential land use in the interior of Reservoir Hill compared to 900-940 West North Avenue or 850 West North Avenue, which would be located in a more commercial area along the periphery of Reservoir Hill. One historic building contributing to the Reservoir Hill Historic District would be impacted by the 900-940 West North Avenue site. The 900-940 West North Avenue site would cost an estimated $590 million, compared to $820 million at 850 West North Avenue or $325 million at Whitelock Street at Brookfield Avenue.

G. Mitigation

Proposed mitigation measures are included in this FEIS to address the impacts created by the Preferred Alternative which cannot be avoided or further minimized. Further details and final commitments for mitigation measures will be included in the ROD. Refer to **Chapter VI, Chapter VII,** and **Appendix H** for further details on mitigation measures proposed in this FEIS. The following actions are representative of the mitigation measures currently proposed but do not constitute final commitments:

- **Outcome Monitoring**: Monitoring the outcomes and effectiveness of mitigation efforts by designating a lead agency, implementing detailed tracking procedures, and providing public reporting.
- **Community**: Establishing a fund to support community development within affected communities; a fund for maintenance and improvement to parks and recreation facilities; funds to support community gardens, vacant lot greening, and public open space improvement; providing a mechanism for public comment in the design and landscaping of project facilities; visual screening of ventilation facilities adjacent to schools; and providing relocation benefits to property owners and tenants.
- **Economy**: Coordinating with local job training organizations to facilitate targeted job training and contract goals for workers of social and economic disadvantage.
- **Transportation**: Providing funds for streetscaping, pedestrian, and bicycle improvements; Maintenance of Traffic Plan for construction; securing the existing B&P Tunnel for future transportation use; replacing impacted facilities at the West Baltimore MARC Station, and providing additional station amenities.
- **Natural Resources**: Implementing various plans, including: a Stormwater Management Plan; an Erosion and Sediment Control Plan; a Rodent Abatement Plan; Street Tree Protection and Forest Conservation Plans; a Floodplain Mitigation Plan; a Tunnel Sump Water Treatment and Disposal Plan; and vegetative buffers to screen right-of-way along the NEC.
- **Hazardous Materials and Emergency Management:** Implementing various plans, including: a Hazardous Spill Prevention Plan; an Emergency Management Plan; a Hazardous Materials Remediation Plan; a Screening and Materials Handling Plan; and a program for the identification and segregation of impacted soils testing and disposal.
- **Construction**: Implementing various plans, including: a Construction Noise Mitigation Plan; a Construction Vibration Mitigation Plan; a Construction Emission Reduction Plan; and providing public information and feedback publications and hotline.
- **Operational Air Quality**: Designing and implementing vertically-oriented fans at ventilation facilities.
- **Operational Noise**: Designing and implementing noise barriers along portions of the rail alignment and ventilation facilities with noise attenuation.
- **Operational Vibration**: Designing and implementing operational vibration control measures to mitigate vibration and ground-borne noise impacts exceeding FTA Frequent impact criteria, to be included in final design.

- **Historic Properties**: Providing mitigation measures, including: historic properties preservation funding; context-sensitive design treatments; cultural resource construction protection plans; written and photographic documentation; interpretive materials; and other cultural resources mitigation measures as defined in the draft Programmatic Agreement (**Appendix H**).

H. Agency, Elected Official, and Public Coordination and Comments

FRA and MDOT have provided opportunities for agencies, elected officials, and the public to stay informed of the Project and provide input into the study, including the development and refinement of alternatives. Agency, elected official, and public input was received from six Interagency Review Meetings, four Public Open Houses, ten community meetings, several individual community association meetings, three DEIS Public Hearings, the Project website, an online comment form, and via e-mail.

The release of the DEIS on December 18, 2015 initiated the DEIS comment period, which ended on February 26, 2016. The DEIS comment period included three Public Hearings, and allowed agencies and citizens to submit formal comments on the DEIS. Agencies and the public were notified of the DEIS comment period and invited to the Public Hearings via the *Federal Register*; e-mails to the Project mailing list; updates to the Project website; newspaper advertisements, including: the *Afro-American,* the *Baltimore Sun,* and the *City Paper*; State Clearinghouse distribution; Study Area brochure mailings; and letters to agencies, elected officials, community associations, and other stakeholders.

A total of 161 comments were received electronically, by mail, and at Public Hearings during the DEIS comment period, from December 18, 2015 to February 26, 2016. The deadline for comments was advertised in the *Federal Register* and ultimately extended due to weather related postponements of the Public Hearings. A response has been prepared for each comment received during the DEIS comment period and each of the three Public Hearings. Comments and responses are presented in **Appendix I** of this FEIS.

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Baltimore and Potomac (B&P) Tunnel Project

Final Environmental Impact Statement
&
Section 4(f) Evaluation

Prepared by:
Federal Railroad Administration

Cooperating Agency
Federal Transit Administration

Pursuant to:

National Environmental Policy Act (42 USC §4332 et seq.), and implementing regulations (40 CFR Parts 1500-1508), Section 4(f) of the U.S. Department of Transportation Act (49 USC §303); National Historic Preservation Act (54 USC §306101 et seq.) and implementing regulations (36 CFR Part 800); Clean Air Act as amended (42 USC §7401 et seq.) and implementing regulations (40 CFR Parts 51 and 93); the Endangered Species Act of 1973 (16 USC §1531-1544) and implementing regulations (50 CFR Part 402); the Clean Water Act (33 USC §1251-1387) and implementing regulations (33 CFR Parts 320 to 324 and 40 CFR Part 230); and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC §4601).

Nov 17, 2016
Date of Approval

Paul Nissenbaum, Associate Administrator
Federal Railroad Administration

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This Final Environmental Impact Statement (FEIS) and Section 4(f) Evaluation describes existing environmental conditions within the Study Area and provides an analysis of impacts on environmental resources from the proposed Baltimore and Potomac (B&P) Tunnel Project. The purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the Northeast Corridor.

Alternatives 3A, 3B, and 3C were carried forward for detailed analysis in the Draft Environmental Impact Statement (DEIS) and Section 4(f) Evaluation. FRA has identified Alternative 3B as the Preferred Alternative in the FEIS. FRA identified the Preferred Alternative based on a comprehensive alternatives development and evaluation process that incorporated public and agency input on the DEIS (completed December, 2015).

The B&P Tunnel Project FEIS and Section 4(f) Evaluation are being made available for public review at the B&P Tunnel Project website (www.bptunnel.com).

Printed copies have been placed in the following locations:

Baltimore City Department of Transportation, Transit Bureau
Bentalou Recreation Center
Bon Secours Community Works
Enoch Pratt Library-Central Branch
Enoch Pratt Library-Edmondson Avenue Branch
Enoch Pratt Library-Pennsylvania Avenue Branch
Enoch Pratt Library-Walbrook Branch
John Eagar Howard Recreation Center
Maryland Department of Transportation
Maryland Transit Administration

Following the public release of this FEIS and Section 4(f) Evaluation, FRA will impose a waiting period for at least 30 days, until December 27, 2016, before releasing its final decision in a Record of Decision.

Chapter I

Introduction

Chapter I

I. INTRODUCTION

The Federal Railroad Administration (FRA) has prepared this Final Environmental Impact Statement (FEIS) and Section 4(f) Evaluation in coordination with the Maryland Department of Transportation (MDOT) and in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [USC] §§ 4321 et seq.), the Council of Environmental Quality (CEQ) NEPA Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), the FRA Procedures for Considering Environmental Impacts (64 Federal Register [FR] 28545 [May 26, 1999]), and FRA's Update to NEPA Implementing Procedures (78 FR 2713 [January 14, 2013]). The Federal Transit Administration (FTA) is involved with the development of the Baltimore and Potomac (B&P) Tunnel Project ("Project") through the NEPA process as a cooperating agency in accordance CEQ regulation 40 CFR § 1508.5.

The Project considers the rehabilitation or replacement of a 1.4-mile long rail tunnel located along the Northeast Corridor (NEC) in Baltimore, Maryland. The B&P Tunnel is owned by the National Railroad Passenger Corporation (Amtrak) and is used for Regional and Acela intercity passenger trains, Maryland Area Rail Commuter (MARC) passenger trains, and Norfolk Southern Railway (NS) freight trains. Built in 1873, the B&P Tunnel is one of the oldest structures on the NEC. The existing double-track tunnel was constructed out of brick and stone masonry; additional materials were added over time.

The Study Area surrounds the existing 1.4-mile B&P Tunnel in west-central Baltimore City, as shown in **Figure II-1**. The extent of the Study Area is intended to maximize capture of potential resources that could directly or indirectly be impacted by the Project.

NEPA requires the preparation of an Environmental Impact Statement (EIS) for all major federal projects or actions that are likely to have a significant impact on the environment. This FEIS is a tool for FRA and MDOT to describe the environmental impacts of the Project in accordance with NEPA. The FEIS summarizes the alternatives evaluation from the Draft Environmental Impact Statement (DEIS), including review of the alternatives, their ability to address the Purpose and Need of the study, and their likely impacts to the social, cultural, and natural environment. This FEIS identifies a Preferred Alternative, provides a rationale for identification of the Preferred Alternative, and describes potential mitigation measures to address the documented environmental impacts of the Preferred Alternative. The DEIS and all technical reports and memoranda referenced in the FEIS are available for review on the Project website at www.bptunnel.com.

Alternative 3B is identified as the Preferred Alternative for the Project. Of the alternatives considered, Alternative 3B best meets the Project's Purpose and Need while minimizing environmental impacts to the maximum extent possible. Specifically, Alternative 3B replaces the aging infrastructure of the existing B&P Tunnel, which is nearing the end of its useful life; improves travel time and reliability in the portion of the NEC between Penn Station, Baltimore, and the Gwynns Falls Bridge; and provides for an improved West Baltimore MARC Station that will be in compliance with the Americans with Disabilities Act (ADA). A description of the Preferred Alternative is included in **Chapter IV** of the FEIS.

Chapter II

B&P TUNNEL PROJECT

Purpose and Need

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department
of Transportation

II. PURPOSE AND NEED

A. Project Background

The existing B&P Tunnel is a crucial link in the greater NEC Main Line, which runs through eight states and Washington, DC. The NEC is the nation's most congested rail corridor and one of the highest volume corridors in the world (Amtrak, 2010a). The NEC came under the control of one owner, Penn Central, in 1969 and under Amtrak in 1971. Currently, the fully electrified NEC provides rail connections from Washington, DC to Boston, Massachusetts, and points between, including Baltimore, Philadelphia, and New York. The NEC moves over 259 million passengers and 14 million car miles of freight cargo each year (Amtrak, 2010a). The NEC is a shared resource used by Amtrak, ten commuter rail operators, and seven freight railroads (NEC Master Plan Working Group, 2010).

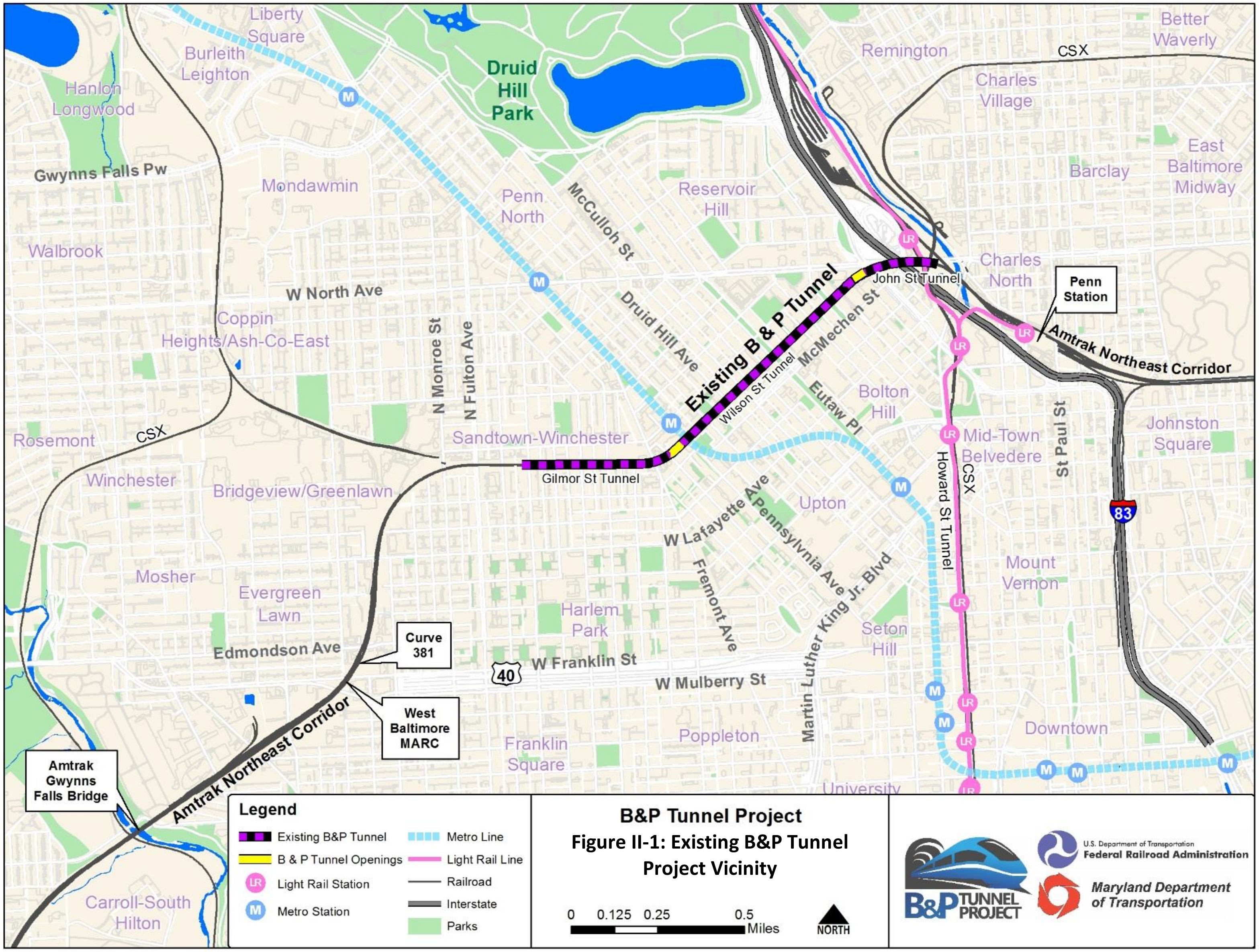
As shown in **Figure II-1**, the existing B&P Tunnel is located beneath several West Baltimore neighborhoods, including Bolton Hill, Madison Park, Sandtown-Winchester, and Upton. The tunnel is currently used by MARC, Amtrak, and NS. Built in 1873, the tunnel is one of the oldest structures on the NEC. It is approximately 7,500 feet (1.4 miles) long and is comprised of three shorter tunnels: the John Street Tunnel, the Wilson Street Tunnel, and the Gilmor Street Tunnel. The double-track tunnel was originally constructed out of brick and stone masonry, though repairs have added additional building materials over time. The line was electrified in the 1930s, and the tunnel was rehabilitated in the 1980s. Continual repairs are required to maintain the aging structures.

B. Prior Studies - Baltimore's Railroad Network

Following a July 18, 2001 fire from a CSX train derailment that occurred in the nearby Howard Street Tunnel, Congress mandated that FRA provide a comprehensive assessment of the region's rail system. In response to the Congressional mandate, FRA completed two studies, *Baltimore's Railroad Network: Challenges and Alternatives* (FRA, 2005) and *Baltimore's Railway Network: Analysis and Recommendations* (FRA and MDOT, 2011). The 2005 report characterized the state of the rail network and the demands placed on it. The study evaluated the existing B&P Tunnel, as well as other components of Baltimore's rail network, and underscored the importance of the B&P Tunnel to the NEC. The study also recommended potential actions that could improve passenger and freight railway capabilities in the Baltimore region, including replacement of the existing B&P Tunnel. The 2011 report supplemented the findings of the 2005 report and evaluated passenger and freight alternative routes through Baltimore. The 2011 report states that "the physical condition of the [existing B&P Tunnel] requires that it be rebuilt or replaced within the next 10-20 years." In addition, "the conditions in the [existing] B&P Tunnel—as well as its criticality to the protection of a reliable passenger service—preclude its expanded use for most freight and constrain the flow of commerce to and through the Baltimore region" (FRA and MDOT, 2011).

C. National High-Speed Rail Program Investments

The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) and the American Recovery and Reinvestment Act of 2009 (ARRA) established guidelines for the development of intercity and high-speed rail corridors. These two Acts called for a collaborative effort by the federal government, states, railroads, and other key stakeholders to help transform America's transportation system through the creation of a national network of high-speed rail corridors. To achieve this vision, FRA published the *High-Speed Rail Strategic Plan* in April 2009 (USDOT, 2009) and launched the *High Speed Intercity Passenger Rail (HSIPR) Program* in June 2009.



B&P Tunnel Project
Figure II-1: Existing B&P Tunnel Project Vicinity

The ARRA and the Fiscal Year 2010 Department of Transportation and Related Agencies Appropriations Act provided $10.1 billion to date to expand passenger rail access to new communities and provide Americans with faster and more energy-efficient travel options. This funding has helped transform travel in America through targeted investments in five key “megaregions” around the country (Seattle-Portland, San Francisco-Los Angeles, Charlotte-Raleigh-Washington, DC, Midwest hub, and Northeast Corridor) that together hold roughly 65 percent of the population and are expected to contain the bulk of future population growth. Baltimore, Boston, New York, Philadelphia, and Washington, DC make up the Northeast megaregion, which is the densest and most economically productive megaregion in the country. This megaregion depends on its ability to accommodate frequent business travel among the cities, thus requiring efficient, reliable, and convenient transportation connections (Amtrak, 2010b).

The HSIPR program is improving the safety, reliability, and accessibility of rail infrastructure for passengers around the country through renewal of corridor infrastructure and stations. The national program is expected to:

- serve as a catalyst for growth in regional economic productivity and expansion by stimulating domestic manufacturing, promoting local tourism, and driving commercial and residential development;
- increase mobility by creating new choices for travelers in addition to flying or driving;
- reduce national dependence on oil; and
- foster livable urban and rural communities.

Through the HSIPR program, FRA is investing $950 million to upgrade some of the most heavily used sections of the NEC. The investments will increase speeds from 135 to 160 mph on critical segments, improve on-time performance, and add more seats for passengers, enabling one of the nation’s busiest corridors to continue to set ridership and revenue records., The preliminary engineering and NEPA analysis for the existing B&P Tunnel is one of the NEC projects funded through the HSIPR program. The B&P Tunnel Project is critical to existing and future NEC operations because the current tunnel is a bottleneck in the rail corridor, does not have detour options in or near Baltimore, and is approaching the end of its useful life.

The Baltimore Metropolitan Council and MDOT amended the Fiscal Year 2011 State Transportation Improvement Program (STIP) list to add federal funds to the 2011-2014 Baltimore Regional Transportation Board’s (BRTB) TIP for the existing B&P Tunnel Improvement Project (TIP # 92-1101-99). This Project is funded by FRA through a HSIPR grant for preliminary engineering and NEPA analysis.

D. Purpose of the Project

The purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, including:

- To reduce travel time through the B&P Tunnel and along the NEC,
- To accommodate existing and projected travel demand for intercity and commuter passenger services,
- To eliminate impediments to existing and projected operations along the NEC, and
- To provide operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore’s rail infrastructure.

E. Need for the Project

The need for the Project has been defined as follows:

- The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the tunnel currently remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands due to the combination of its vertical and horizontal track alignment, i.e., its grades and curves. The low-speed tunnel creates a bottleneck at a critical point in the NEC, affecting operations of the most heavily traveled rail line in the United States.

- The existing B&P Tunnel does not provide enough capacity to support existing and projected demands for regional and commuter passenger service along the NEC.
- The existing B&P Tunnel is not suited for modern high-speed usage due to the current horizontal and vertical track alignment, which limits passenger train speeds through the tunnel to 30 mph.
- The existing B&P Tunnel is a valuable resource. The disposition of the existing tunnel needs to be considered in the Project.

1. Physical Condition

The existing B&P Tunnel's two-track cross-section is horseshoe-shaped arch with an approximate spring line width of 27 feet between the side walls and centerline height of about 21 feet. The majority of the existing double-track B&P Tunnel is supported by a multiple course brick-lined arch and masonry sidewalls. One of the existing B&P Tunnel's tracks is typically designated for northbound traffic and the other for southbound traffic. Safety refuge areas (referred to as manholes) are located in the sidewalls of the tunnel. There is no physical separation of the tracks, which prohibits major improvements to the existing tunnel while in service due to operational and construction safety requirements. The existing track layout causes difficulties for maintenance and repair. Short working windows require multiple mobilizations for repairs, thus slowing progress and substantially increasing maintenance costs.

Water-saturated soil beneath the tunnel is causing its floor slabs to sink, forcing Amtrak to make repeated repairs (NEC Infrastructure and Operations Advisory Commission, 2013). Also, drainage through the tunnel's walls, leakage from existing utility lines, poor drainage of the tunnel's invert, and insufficient clearance were noted in a prior study of the tunnel (FRA and MDOT, 2011). Most recently, the *Existing B&P Tunnel Visual Inspection* prepared by B&P Tunnel Project engineers provides a review of the tunnel's structural integrity, water infiltration[1], drainage system function, railroad components, safety, and security. The inspection was performed between July 8, 2014 and July 18, 2014 and generally reviewed the NEC from Milepost 96 to Milepost 97.5. It covered the full lengths of the three tunnel sections, the north and south portals, and the two intermediate day-light sections between the three tunnels.

The Inspection Report is summarized by tunnel section in the outline below. The report identifies glistening surfaces and/or wet conditions for all three of the tunnel sections. Leaking water through the tunnel walls can lead to structural, electrical and mechanical problems. Leaking water could also carry fill material required for stability from behind the walls; this is a particular problem for horseshoe-shaped tunnels (such as the B&P Tunnel segments) that rely on fill material outside of the tunnel structure to provide resistance to the compressive forces transferred from above. These materials and the proper balance of force is necessary for the continued stability of the tunnel. Once a leak develops and water establishes a flow path, the problem of leaking may continue to develop over time as water flows through the path of least resistance. In addition, the Wilson Street Tunnel and the John Street Tunnel both have "multiple rows of missing brick", indicative of deterioration over time of the tunnels' masonry and concrete elements.

---

[1] Water infiltration in the existing B&P Tunnel relates to water leaking into the tunnel. This water can carry fine deposits and can leave voids behind the tunnel's liner and under slabs. The water infiltration also has the potential to prematurely age sump pumps and increase maintenance requirements and costs.

a. Gilmor Street Tunnel

Of the three tunnel sections, the Gilmor Street Tunnel is currently in the best physical condition. However, issues with this tunnel include sections of brick and mortar loss. Other problems include:

- transverse (crossways) cracks,
- spalls (chips/fragments) in the bench wall (elevated walkway used by maintenance personnel),
- shallow delaminations (divisions of thin layers) in the gunite (proprietary name of an early form of shotcrete that is a mix of Portland cement and sand) coating, and
- glistening surfaces due to moisture, which may indicate the possibility of water flow that could lead to structural, mechanical, or electrical problems in the tunnel.

b. Wilson Street Tunnel

Of the three tunnel sections, Wilson Street Tunnel is in the poorest physical condition. The majority of the tunnel is wet and actively leaking. Many of the leaks come from behind the tunnel’s liner and produce efflorescence (crystalline deposits). Other problems include:

- spalls in the bench wall,
- shallow delaminations in the gunite coating,
- inflow of water from the invert (floor),
- large amount of debris in invert,
- brick debris on top of duct bench,
- deteriorating manholes, and
- multiple rows of missing brick over extended lengths.

c. John Street Tunnel

The leakage and moisture conditions in the Wilson Street Tunnel continue into the John Street Tunnel, but are not present over its entire length. Most of the leakage has pooled in the invert where the drainage system is clogged. Other problems include:

- spalls in the bench wall,
- deteriorating manholes,
- thick efflorescence,
- multiple rows of missing brick, and
- missing mortar.

2. Existing Track Alignment

The existing B&P Tunnel’s grades and horizontal alignment limit train speeds, increase travel time, and impact the NEC’s ability to support high-speed rail systems. A railroad’s efficiency is dependent on its vertical and horizontal alignment, i.e. its grades and curves. Steep grades and the NEC’s curvature, especially near Winchester Street (where the existing B&P Tunnel turns sharply at the entrance of the Gilmor Street Tunnel), prohibit high-speed service.

According to *Baltimore's Railroad Network: Challenges and Alternatives* (FRA, 2005), the NEC has "very difficult tunnel alignments" and "especially noteworthy are the restrictions imposed by the [existing] B&P Tunnel" for the roughly two miles between Mileposts 95.9 and 97.7. **Table II-1** shows the maximum allowable speeds on Amtrak's NEC through Baltimore in and adjacent to the existing B&P Tunnel.

Table II-1: Maximum Allowable Speeds on Amtrak's NEC through Baltimore

Route Segment	Max Speed Passenger Service	Max Speed Freight Service
Union Tunnels, north of Baltimore Penn Station	45 mph	30 mph
Existing B&P Tunnel, south of Baltimore Penn Station	30 mph	20 mph
South of existing B&P Tunnel to Baltimore Washington International (BWI) Rail Station	110 mph	50 mph or less

Note: These maximum allowable speeds are general guidelines, always subject to site- and time-specific considerations.
Source: Baltimore's Railroad Network: Analysis and Recommendations, Table 2-7 (FRA and MDOT, 2011).

Maximum allowable speed in the existing B&P Tunnel is 30 mph for Amtrak trains and 20 mph for freight service. All passenger trains must slow down in order to stop at Baltimore Penn Station. Trains traveling from the north must slow down to pass through the B&P Tunnel before gaining speed south of the B&P Tunnel (up to 110 mph for passenger services currently, with higher speeds expected in the future).

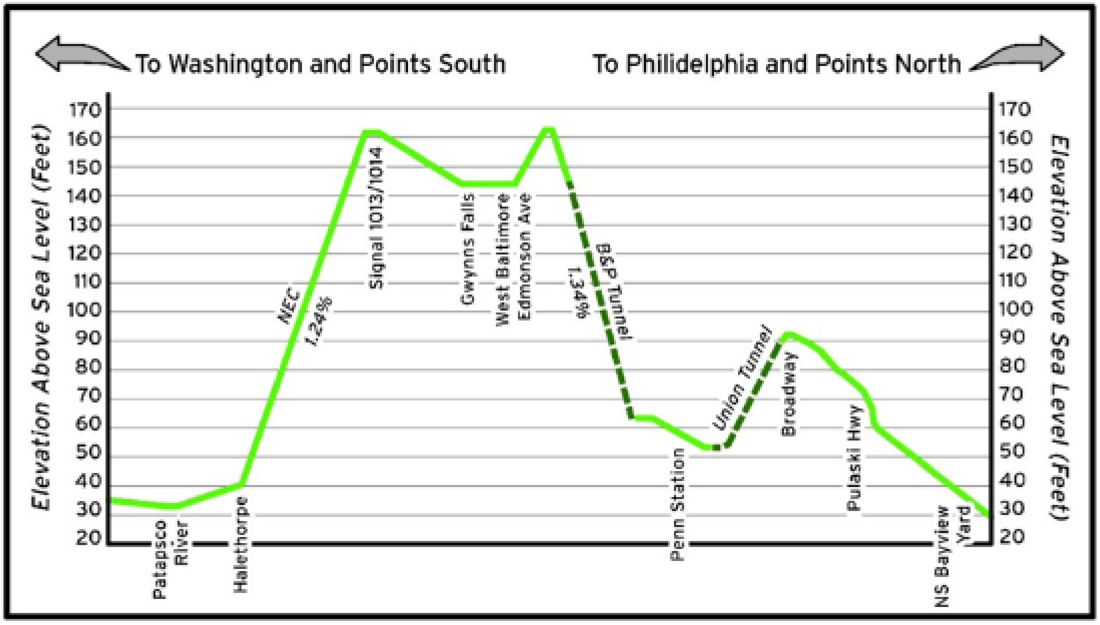
Southbound trains entering the existing B&P Tunnel slow for a sharp (8 degree) curve then ascend on a mile-long 1.34 percent grade, the steepest grade on the NEC between Philadelphia and Washington, DC. **Figure II-2** shows the elevation changes along the NEC. The elevation of the existing B&P Tunnel ranges from 150 feet above mean sea level to 70 feet above mean sea level. (FRA and MDOT, 2011).

Additionally, the approach section to the tunnel at the West Baltimore MARC Station is located on a curve (referred to as Curve 381) that limits train speeds to 55 mph. Curve 381 precludes level boarding of MARC trains, as the high-level platforms on sharp curves (greater than 1 degree) require passengers to negotiate a large gap between the platform and the train car door. As this is considered to be an unsafe condition, platforms on such curves are positioned at grade. The lack of a high-level boarding platform prevents designation of the West Baltimore Station as an accessible boarding location. The need to provide Americans with Disabilities Act (ADA) compliant facilities at the West Baltimore MARC Station has been the subject of previous planning studies conducted by MTA.

3. Bottleneck in NEC Operations

The NEC is the most heavily traveled rail corridor in the United States (NEC Master Plan Working Group, 2010). The NEC traverses eight northeast states and Washington, DC. The NEC is a shared resource used by Amtrak, with ten commuter rail operators and seven freight railroads (NEC Master Plan Working Group, 2010).The NEC connects the five major metropolitan areas of Washington, DC, Baltimore, Philadelphia, New York, and Boston. According to the *NEC Infrastructure Master Plan* (Amtrak, 2010a)*,* this rail network is a centerpiece of the transportation infrastructure that contributes to the economic vitality of the Northeast region. By linking all the major northeastern cities, it moves more than 259 million passengers and 14 million car-miles of freight per year (Amtrak, 2010a).

Figure II-2: Elevation Changes along the NEC



Source: Baltimore's Railroad Network: Analysis and Recommendations, Figure 2-20 (FRA and MDOT, 2011).

Due to the age of the existing B&P Tunnel and the technological advancement of the rail system in the more than 140 years since it was built, the existing B&P Tunnel limits the functionality of railroads through Baltimore and along the NEC. The existing B&P Tunnel is "a major chokepoint for intercity, commuter, and freight operations in the northeast" (Amtrak, 2010a). The tunnel creates a bottleneck in NEC operations due to its reduced travel speeds. The NEC, which has active use of three and four tracks elsewhere, has only two tracks through the existing B&P Tunnel, which must accommodate a mixture of regional and commuter passenger trains and freight service. Therefore, FRA has determined that four tracks through the Project Area would be necessary to alleviate the existing bottleneck and accommodate future demands as predicted by the NEC FUTURE program. The volume of trains forecast by the NEC FUTURE program, as documented in the NEC FUTURE Tier 1 DEIS, would not be accommodated without a four-track alignment through Baltimore (FRA, 2015). See **Section II.E.4.i** below for more information on the NEC FUTURE program.

Travel times through the existing B&P Tunnel are listed in **Table II-2**. Amtrak times are measured between a stop at Baltimore Penn Station and passing block signals 993/994 (at approximately Milepost 99.2, Gwynns Falls Bridge), while MARC times are measured between a stop at Baltimore Penn Station and a West Baltimore Station stop (Milepost 98.5). Trip times through the existing B&P Tunnel range from 5 minutes and 48 seconds to 7 minutes and 16 seconds. As indicated in the table, travel time is longer for northbound trains that stop at Baltimore Washington International (BWI) Rail Station because they must slow down to diverge at the Bridge Interlocking before entering the existing B&P Tunnel.

Table II-2: Current Trip Times Through the Existing B&P Tunnel

Trip Direction	MARC Commuter[1]	Amtrak Regional/Intercity[2]	Acela[3]
Southbound	5 min, 48 sec	6 min, 20 sec	5 min, 52 sec
Northbound (No stop at BWI)	N/A	6 min, 5 sec	5 min, 56 sec
Northbound (Stop at BWI)	6 min, 18 sec	7 min, 16 sec	7 min, 1 sec

[1] *Trainset assumed for MARC Commuter trains: HHP-8 locomotive plus 7 MARC III cars.*

[2] *Trainset assumed for Amtrak Regional/Intercity trains: AEM7 locomotive plus 8 Amfleet cars.*

[3] *Trainset assumed for Acela trains: standard Acela trainset.*

Source: General Orders Timetable (Amtrak, December 2012 and 2014).

4. Operational Needs of the NEC

Three major providers use the existing B&P Tunnel: Amtrak, MARC, and NS. The providers have documented the need for improvements along the NEC, particularly in Baltimore City and the area surrounding the existing B&P Tunnel. The following reports discuss the operational needs of the NEC, including improving the bottleneck created by the existing B&P Tunnel:

- *Baltimore's Railroad Network: Challenges and Alternatives* (FRA, 2005)
- *The Northeast Corridor Infrastructure Master Plan* (Amtrak, 2010a)
- *A Vision for High-Speed Rail in the Northeast Corridor* (Amtrak, 2010b)
- *Baltimore's Railway Network: Analysis and Recommendations* (FRA and MDOT, 2011)
- *The Amtrak Vision for the NEC* (Amtrak, 2012)
- *Critical Infrastructure Needs on the Northeast Corridor* (NEC IOAC, 2013)
- *MARC Growth and Investment Plan - Update 2013 to 2050* (MTA, 2013)
- *Washington Terminal Yard Future Operating Plans* (MARC/Amtrak 2020 and 2030 Plans) (LTK Engineering Services, 2014)
- *NEC FUTURE: A Rail Investment Plan for the Northeast Corridor* (FRA, 2015)
- *Baltimore Penn Station Master Plan* (Amtrak, 2015)

a. Baltimore's Railroad Network: Challenges and Alternatives (2005)

FRA and MDOT developed *Baltimore's Railway Network: Challenges and Alternatives* (FRA and USDOT, 2005) in response to the November 2001 request from Congress. The study evaluates the condition and capabilities of the railroad network's fixed facilities and examines the benefits and costs of various alternatives for reducing congestion and improving safety and efficiency in the rail operations throughout the larger Baltimore region. Part 1 of the report characterizes the state of the network and demands placed on it. The study evaluates the existing B&P Tunnel, among other components of Baltimore's rail network, and emphasizes its importance to the overall NEC system. The study explains that "the conditions in the [existing] B&P Tunnel – as well as its criticality to the protection of a reliable passenger service – preclude its expanded use for most freight and constrain the flow of commerce to and through the Baltimore region." The study also describes the history of renovations made to the existing B&P Tunnel as well as its current car plate (i.e., height and width) clearance restrictions and "difficult geometry," noting that the "sharp curve at the south portal of the tunnel prevents southbound trains departing [Baltimore's Penn Station] from accelerating beyond 30 mph."

Part 1 of the 2005 study examines the horizontal and vertical track alignment of the existing B&P Tunnel, explaining that "grade, particularly in combination with curvature, has a major impact on the tractive effort and horsepower required to move a train of a given tonnage over a line. Collaterally, grades affect the speed, schedule, and on-time performance of a freight train, and to a lesser degree, a passenger train. Curves, in themselves, can severely limit train speeds because of the forces they create as trains pass over them, and the safety, ride quality, maintenance, and cost issues that these forces raise – issues that are worsened in mixed traffic conditions. For example, allowable superelevations (banking) on curves may differ for passenger and freight service. Where both services regularly share the same tracks, compromises must be made that may allow neither service to operate optimally."

The potential actions that could improve passenger and freight railway capabilities in the Baltimore region are detailed in Part 2 of the study. Replacement of the existing B&P Tunnel is a stated objective of the study. The study explains that "the tunnel's basic geometry was substandard when it was completed [in 1873]." Information from this study has been considered and incorporated into subsequent stages of the planning process during development of this EIS.

b. The Northeast Corridor Infrastructure Master Plan (2010)

The Northeast Corridor Infrastructure Master Plan (Amtrak, 2010a), prepared by Amtrak, provides a regional, corridor-wide perspective of the NEC Main Line and all its feeder lines. The Master Plan identifies an initial baseline of infrastructure investment needed to maintain the current NEC system in a state of good repair; integrates intercity, commuter and freight service plans; and moves the NEC forward to meet the expanded service, reliability, and trip-time improvements that are envisioned by the Northeast states and the District of Columbia. The plan identifies the existing B&P Tunnel as one of several major assets along the NEC that are approaching the ends of their useful lives, and which impede the overall speed, capacity, and reliability of the NEC Main Line. This plan states that the existing B&P Tunnel is “a major chokepoint for intercity, commuter, and freight operations in the northeast.”

c. A Vision for High-Speed Rail in the Northeast Corridor (2010)

The need for high-speed rail in the NEC for present and future transportation networks is documented by Amtrak in *A Vision for High-Speed Rail in the Northeast Corridor* (Amtrak, 2010b). The report identifies general alignment constraints, such as dedicated tracks and curvature limits that would be required to implement next-generation high speed rail service along the NEC. This report includes a graphic from the 2010 NEC Master Plan, identifying the existing B&P Tunnel as a “previously identified chokepoint” and reiterates that the NEC through Baltimore exceeded 75 percent utilization capacity in 2008 and will exceed 100 percent by 2030. The report explains that “Amtrak services must play an expanded role in meeting the corridor’s mobility and economic support needs. The NEC’s daily use by major commuter rail operations and by numerous freight trains further underscores this importance. The benefits of the proposed Next-Generation High-Speed Rail system investment would extend beyond intercity rail passengers to air passengers, rail commuters, and highway drivers who will realize transportation network capacity gains.”

d. Baltimore’s Railroad Network: Analysis and Recommendations (2011)

Baltimore’s Railway Network: Analysis and Recommendations (FRA and MDOT, 2011) is a feasibility study by FRA and MDOT that focused on large-scale, regional rail issues. The study supplements the findings of *Baltimore’s Railroad Network: Challenges and Alternatives* (FRA and USDOT, 2005). It focuses on the principal elements of Baltimore's network of passenger and freight rail lines extending from Perryville—the junction of Amtrak's NEC with the NS principal route from Harrisburg and points west—to Halethorpe, where CSX Transportation and Amtrak lines from Washington, DC cross. Therefore, this 2011 study includes the existing B&P Tunnel, but covers a much larger area than the proposed B&P Tunnel Project. In Phase I of the report, a number of passenger and freight alternative routes through Baltimore are developed and evaluated. Phase II of the report further refines the engineering and cost aspects of two preferred alternatives.

The study explains that “Amtrak’s route through Baltimore is crucial to the viability of all intercity rail passenger service in the United States.” Specifically, one-fifth of Amtrak’s passenger-trips and one-third of its total revenues stem from trips making use of at least one of the NEC’s Baltimore tunnels. Most of these trips depend on both the existing B&P Tunnel and the Union Tunnel (FRA and MDOT, 2011).

The study discusses the deteriorating condition of the existing B&P Tunnel and the tunnel’s effects on NEC operations due to limited travel speeds, capacity, freight loading flexibility, and lack of detour route options. Track alignment through the existing B&P Tunnel and clearance are discussed in detail in the study. The study explains that “the physical condition of the tunnel requires that it be rebuilt or replaced within the next 10 to 20 years.”

e. The Amtrak Vision for the NEC (2012)

The Amtrak Vision for the NEC report provides an update to the Vision for High-Speed Rail in the Northeast Corridor (Amtrak, 2010b), identifying recent developments in NEC planning and highlighting key findings related to how Amtrak can translate various strategies and concepts for growth and improvement of the NEC into reality. The report states that the entire network is often operating at or near capacity and is routinely hampered with congestion and delays. It recognizes that significant efforts are underway that address rehabilitation needs and reducing existing congestion. The NEC consists of aging infrastructure that will require extensive repair for safe and efficient operations at current traffic levels. Significant investments in the existing NEC will help eliminate key bottlenecks that limit service frequency and negatively affect reliability and performance. This report lists milestones over the next 30 years, with increases in tunnel and terminal capacity. Improvements to the existing B&P Tunnel are identified as a key project for trip-time and frequency improvements between Washington, DC and New York.

f. Critical Infrastructure Needs on the Northeast Corridor (2013)

Critical Infrastructure Needs on the Northeast Corridor (NEC IOAC, 2013) was prepared by the NEC Infrastructure and Operations Advisory Commission. The report was developed through a consensus-based process by the NEC Commission's members, which include representatives from the NEC States, USDOT, and Amtrak. This report recognizes that additional investment is necessary to renew and enhance the NEC as a world-class, high-performance rail corridor supporting the economic development and international competitiveness of the region and the nation with job creation, improved reliability of existing services, and a foundation for future mobility and economic growth. The report notes that the existing B&P Tunnel is one of the oldest structural assets on the NEC, it "severely" limits train speeds in Baltimore, and identifies it as "a major capacity bottleneck for both passenger and freight trains. Development of the B&P Tunnel replacement project would mitigate a chokepoint, eliminate speed restrictions, and enhance freight access to the port of Baltimore" (NEC IOAC, 2013). The report identifies the B&P Tunnel Project as a necessary project on the NEC, and states that "while the alignment and design of any new tunnel is yet to be determined, planning will consider options for supporting higher-speed train service and creating separate routes for passenger and freight trains through Baltimore." The report also explains that "new tunnels could free the existing tunnels for renewal, ultimately for additional capacity, and make Amtrak and MARC less susceptible to maintenance-related delays."

g. MARC Growth and Investment Plan - Update 2013 to 2050 (2013)

The *MARC Growth and Investment Plan - Update 2013 to 2050* (MTA, 2013) by MTA presents a summary of the commuter rail program whose service areas include Baltimore and Washington, DC and surrounding areas, with an average of 36,000 daily trips using the Penn, Camden, and Brunswick Lines. The plan identifies ridership and parking trends, re-aligns agency priorities, updates objectives for MARC service, and summarizes the growth of the Penn, Camden and Brunswick Lines. While the average annual growth from 2007 to 2012 in ridership for the Camden Line and Brunswick Lines were 0.5 percent and 1.7 percent, respectively, the Penn Line reported 3.5 percent growth. The Plan states that ridership demand is expected to continue to grow at historical rates. Challenges identified in the plan include insufficient track capacity on all three lines. In addition, the Plan notes that MARC's flexibility and ability to expand service is constrained by existing infrastructure and interactions with other rail operators.

The MARC Growth and Investment Plan also identifies a new station at West Baltimore under the State of Good Repair long-term plan (2020-2029). The November 2008 West Baltimore Master Plan noted opportunities and plans for economic growth in the area. The USDOT Ladders of Opportunity Program identified the West Baltimore MARC Station as one of seven national locations where the USDOT will help foster sustainable economic development related to planned transportation projects.

h. Washington Terminal Yard Future Operating Plans (MARC/Amtrak 2020 and 2030 Plans) (2014)

Amtrak and MARC developed the *Washington Terminal Yard Future Operating Plans* as draft conceptual Amtrak/MARC operating plans for the 2020 and 2030 time horizons for use in conjunction with the Washington Union Station (WUS) and Washington Terminal Yard (WTY) Master Plans. Based on this ongoing study, MARC expects a 3 percent ridership increase per year on the Penn Line, which is the equivalent of an approximately 60 percent ridership increase through 2030 when compounded annually.

i. NEC FUTURE (2015)

NEC FUTURE (FRA, 2015) is a comprehensive planning effort to define, evaluate, and prioritize long-term future investments in the NEC, from Washington, DC to Boston. The FRA launched NEC FUTURE in February 2012 to consider the role of rail passenger service in the context of current and future transportation demands. Through the NEC FUTURE program, FRA will determine a long-term vision and investment program for the NEC. The Tier 1 Draft Environmental Impact Statement (Tier 1 Draft EIS) for NEC FUTURE was completed in November 2015 and assesses the broad impacts of investment programs to improve passenger rail service within the NEC FUTURE Study Area. FRA will prepare a Service Development Plan (SDP) based on the selection of the investment program identified through the NEC FUTURE Tier 1 EIS Process. The SDP will provide the platform for implementation of the program by the federal government, states, the NEC Infrastructure and Operations Advisory Commission (NEC Commission), and the NEC railroads. More information on the NEC FUTURE program is available on the NEC FUTURE program website at www.necfuture.com.

As part of the NEC FUTURE, FRA developed projections for the future passenger train volumes through the B&P Tunnel for the year 2040. These projections identified the need for a minimum of four tracks through Baltimore to serve the future passenger demand along the NEC. Currently, the NEC has three or four tracks elsewhere but only two tracks through the existing B&P Tunnel.

j. Baltimore Penn Station Master Plan (2015)

Amtrak is in the early planning stages of developing a master plan for the future needs at Baltimore Penn Station (Amtrak, 2015). The plan will outline a series of incremental and phased improvements to the station facility and select land assets to guide the station into the future. The master plan will build off three studies: the Operations and Facilities Study, which will assess the long-term operational and facility requirements for Baltimore Penn Station to meet the growing capacity demands; the State of Good Repair Study; and the Commercial Development Study. Early coordination between the B&P Tunnel Project Team and Baltimore Penn Station representatives indicated that the projects would impact the other. Planned replacement of high level platforms at Baltimore Penn Station would not have any material effect on the alternatives considered for the B&P Tunnel Project.

5. System Linkage and Rerouting

There are no practical detours available to route rail traffic around the existing B&P Tunnel for maintenance or in case of emergencies without rail services experiencing extensive delays. In an emergency or bottleneck situation, there is no way to route NEC traffic over the CSX rail line, or vice versa. This lack of inter-operability came to the forefront during the Howard Street Tunnel fire, when CSX had to route trains via Cleveland, Ohio (FRA and MDOT, 2011). Another constraint associated with system linkage is related to the close proximity of the Union Tunnel, just north of Baltimore Penn Station, and its passenger and freight restrictions with substantial elevation changes.

With no practical detour route options for the existing B&P Tunnel, a major maintenance problem in the tunnel could have a substantial impact to rail operations, since the NEC does not have inherent redundancy at this location. The existing B&P Tunnel's two tracks are in the same structural envelope, which means that incidents that affect service on one track, most likely affect the other track as well, reducing the possibility of single-tracking around an issue. Single-tracking can be accomplished in some cases if a train can safely pass on the other track, but since there is no physical separation between the tracks, tunnel repairs typically impact service on both tracks. Currently, if the existing B&P Tunnel were closed for major renovations/repairs or an emergency, passenger train service along the NEC through Baltimore would be stopped.

In order for NS to avoid using the B&P Tunnel in an emergency, closure due to maintenance, or to circumnavigate Baltimore with a Plate H (or double-stacked) train, a three-hour delay and an additional 111.6 miles are added to the route. Use of the Hagerstown route eliminates the expensive and time-consuming need to exchange high dimension cars in order for a train to be routed through Baltimore.

6. Capacity to Support Existing and Projected Demands

Roughly 50 million people, or one out of every six Americans, live in the NEC region (NEC IOAC, 2013). "It is the country's economic powerhouse, generating $1 out of every $5 in gross domestic product....The density that supports this immense productivity, however, also creates congestion challenges for [the] transportation network… Every day, over 700,000 people, nearly half of all railroad commuters nationally, travel over portions of the NEC… Overall, ridership on Amtrak's NEC services has grown 37 percent since 2000" and the demand for rail service along the NEC is at record levels (NEC IOAC, 2013). "Contributing factors to this growth include a relative rebound in population and employment growth in its major urban markets, increasing delays affecting other major transportation options including highways and air travel, and the reliability and convenience of rail in serving core-city markets for both intercity and local travel. The NEC, however, cannot continue to accommodate this rising demand due to infrastructure that is highly constrained and in need of repair" (NEC IOAC, 2013).

As population increases and dependency on rail transportation grows, the demand for more efficient, better rail service within the Northeast megaregion is expected to rise. This will increase the service demands for the number of passenger trains for Amtrak and MARC along the NEC and require additional capacity and improved operations throughout the Project limits.

a. Existing Use

i. *Commuter and Passenger Rail*

As shown in **Table II-3**, 57 MARC trains currently use the existing B&P Tunnel each day. Of those, 17 trains travel through the tunnel during the four-hour evening peak period. MARC has approximately 4,600 passenger trips that use the tunnel per day with 1,900 passenger trips using the tunnel during the four-hour evening peak period.

Amtrak has a total of 88 trains that currently use the existing B&P Tunnel each day. That number consist of 33 Acela Express trains, 43 Northeast Regional service trains, and 12 long-distance trains. Of those, 18 trains travel through the tunnel during the four-hour evening peak period. Amtrak has approximately 17,000 passenger trips that use the tunnel per day, with 3,400 passenger trips using the tunnel during the four-hour evening peak period.

Table II-3: NEC Trips through the Existing B&P Tunnel Corridor

	Number of Trains (2014)		Number of Passengers (2014)	
Types of Service	Daily	4-Hour PM Peak Period	Daily	4-Hour PM Peak Period
Intercity (Amtrak)	88	18	17,000	3,400
MARC Commuter Rail Service	57	17	4,600	1,900
NS Freight	2	0	N/A	N/A
TOTAL	**145**	**35**	**21,600**	**5,300**

Source: (Amtrak, December 2012 and 2014).

i. *Freight Rail*

Approximately 50 Class 1 and regional freight trains use the NEC each day to serve industries, power plants, and ports in the Northeast and Midwest. This heavy volume of freight traffic reinforces the NEC's role as a vital link in the national freight network. However, due to capacity, speed, and loading constraints, all rail freight movements between the northeast and southwest parts of the Port of Baltimore are difficult and costly to accomplish. The Port is a major economic player in the Baltimore region and generates $1.5 billion in business revenue annually (Amtrak, 2010a). Freight usage through the tunnel is limited and most freight on the NEC is routed around the existing B&P Tunnel. No CSX freight currently utilizes the B&P Tunnel due to lack of connectivity, clearance issues, and other constraints along the NEC through Baltimore.

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, NS operates one train which makes a round trip through the existing B&P Tunnel daily for freight purposes, and does not travel through the tunnel during the four-hour peak evening period, as shown in **Table II-3**.

Vertical clearance is a limiting characteristic of the existing B&P Tunnel. The existing vertical clearance of the B&P Tunnel ("Plate C") is unable to support passage of larger, newer freight cars ("Plate H"). **Table II-4** shows the critical dimensions and examples of associated car types. "Plate" refers to a standard-sized vertical and horizontal clearance of the train.

Table II-4: Critical Dimensions and Associated Car Types

Plate	Maximum Height Above the Top of Rail	Width at Maximum Height Above Top of Rail	Typical Car Types Satisfying Plate
C	15'6"	7'0"	Conventional box cars, flats (depending on load), gondolas, coal hopper cars
H	20'2"	8'6⅜"	Double-stack container cars, tri-level auto rack cars, high-cube box cars

The existing B&P Tunnel's Plate C clearances do not allow sufficient clearance for modern, efficient Plate H double-stack container cars, tri-level auto carriers, and high-cube box cars (FRA and MDOT, 2011). For clearance Plate C, the maximum height above the top of rail is 15'6" and width at maximum height above top of rail is 7'0". Typical car types used with clearance Plate C are conventional Amtrak and MARC passenger cars, box cars, flats, gondolas, and coal hopper cars. None of the north-south traffic lanes through Baltimore can currently accommodate Plate H double stack container cars and tri-level auto carriers. Therefore, NS cannot service any local shippers south of Baltimore with the most modern cars. In Washington, DC, the District Department of Transportation (DDOT) and CSX are studying the Virginia Avenue Tunnel in order to accommodate Plate H clearances and address another major bottleneck in the eastern seaboard freight network. Completion of the

Virginia Avenue Tunnel project[2] would lead to a greater focus on the existing B&P Tunnel as a freight clearance impediment, and further emphasize the need to replace the existing tunnel with a new tunnel featuring the proper clearances.

b. Future Needs

"The aging and congested multimodal transportation network of the Northeast region is facing a crisis. An expected increase in population, estimated to grow by 30 percent from roughly 50 million residents today to 65 million in 2050, will create additional travel demand and strain an already stressed network that routinely operates near or at capacity along key segments" (Amtrak, 2012). According to the *Baltimore Railroad Network: Analysis and Recommendations* (FRA and MDOT, 2011), the demand for train movements of all types is expected to increase by 40 percent northeast of Baltimore and 37 percent southwest of Baltimore between 2008 and 2050. By mid-century, a heightened pressure for rail transport would place a huge incremental load on an antiquated rail network that, if left unchanged, would continue to detract from the speedy, efficient, and economical movement of passengers and goods along the East Coast (FRA and MDOT, 2011).

i. *Commuter and Passenger Rail*

Future needs for Amtrak in the NEC are identified in the series of reports and plans covered under **Section II.E.4.,** Operational Needs of the NEC.

The average annual growth from 2007 to 2012 for the MARC Penn Line was 3.5 percent, and ridership demand is expected to continue to grow at historical rates. MARC service is expected to increase substantially both north and south of Baltimore, with possible extensions to Elkton, Maryland, or Newark, Delaware, in the longer term. The *MARC Growth and Investment Plan Update - 2013 to 2050* identifies challenges related to trains being crowded at rush hour and states that adding flexibility and expanding service is constrained by infrastructure (MTA, 2013). MARC expects a three percent future ridership increase per year on the Penn Line, which is the equivalent of approximately a 60 percent ridership increase through 2030 when compounded annually (LTK Engineering Services, 2014).

The *West Baltimore MARC Station Master Plan (Transit-Centered Community Development Strategy)* identifies improvements to the Penn Line and West Baltimore MARC Station that would reduce the amount of time between trains (Baltimore City and MDOT, 2008). The proposed improvements would allow a decrease from 25-minute to 15-minute headways during rush hour, from once an hour to once every 30 minutes in non-rush hour times, and provision of late evening and weekend service.

The MTA has been evaluating options to make the West Baltimore MARC Station fully accessible, in compliance with ADA. One method to accomplish this would be to relocate the existing MARC platforms several hundred feet south of the existing West Baltimore MARC Station.

ii. *Freight Rail*

According to the *Baltimore's Railroad Network - Challenges and Alternatives* report, the freight capacity of the Baltimore network is not sufficient to handle the expected freight volumes forecasted for 2050 (FRA, 2005). A 44 percent national increase in freight traffic is projected by 2030 (Amtrak, 2010a).

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[2] Please refer to "www.virginiaavenuetunnel.com" for additional information regarding the Virginia Avenue Tunnel project.

F. Summary

The Project purpose is to address the structural and operational deficiencies of the existing B&P Tunnel and support future high-speed rail services along the NEC. The Project would improve operations along the NEC, improve passenger rail services, and support existing and future demands along the NEC. The physical condition of the existing B&P Tunnel requires that it be rebuilt or replaced within the next 10-20 years (FRA and MDOT, 2011). Not only is the structure over 140 years old, the design of the railway is unable to support higher speed trains or more passenger and freight capacity. The structural and operational deficiencies result in a transit bottleneck along the NEC in Baltimore.

According to the *Northeast Corridor Infrastructure Master Plan*, the B&P Tunnel is important not only for Baltimore, but also the entire NEC (Amtrak, 2010a). The NEC traverses eight states and Washington, DC. It is shared by eight commuter railroads and three freight railroads. It connects the five major metropolitan areas of Washington, DC, Baltimore, Philadelphia, New York, and Boston. The existing B&P Tunnel is a centerpiece of the Baltimore rail network that contributes to the economic vitality of the Northeast region. The NEC Master Plan identifies the need to maintain the current NEC system in a state of good repair; integrate intercity, commuter, and freight service plans; and move the NEC forward to meet the expanded service, reliability, frequency, and trip-time improvements that are envisioned by the Northeast states and the District.

Chapter III

Alternatives Development

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department
of Transportation

III. ALTERNATIVES DEVELOPMENT

This FEIS includes a detailed evaluation of the Preferred Alternative for the B&P Tunnel Project in **Chapter VI**. The alternative was advanced through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state, and local government agencies. FRA has identified Alternative 3B as the Preferred Alternative based on the information provided.

This chapter summarizes the process by which an initial set of sixteen preliminary alternatives were developed and narrowed down based on design criteria, the Project Purpose and Need, evaluation of environmental impacts, and agency and public coordination. The alternatives development process has been documented in the *Preliminary Alternatives Screening Report*, *Alternatives Report*, *and Draft Environmental Impact Statement* (DEIS) documents. Refer to these reports for more detailed information on each phase of the alternatives development process leading up to this FEIS.

The DEIS evaluated four alternatives: Alternative 1: No-Build, Alternative 3A, Alternative 3B, and Alternative 3C. Since the publication of the DEIS, Alternative 3A, Alternative 3B, and Alternative 3C have undergone engineering refinements to reduce impacts and respond to public comments. This chapter includes descriptions of these refinements to Alternative 3A, Alternative 3B, and Alternative 3C.

This chapter also explains the rationale for the identification of Alternative 3B as the Preferred Alternative, which is based on information presented in the FEIS, and public and agency input on the Project alternatives.

A. Alternative Design Elements

1. Alternatives Design Goals

Design development and environmental evaluation were based on design goals that considered existing and future NEC operations, the Baltimore Penn Station Master Plan, and input from agencies and the public.

a. NEC Operations

In the Project Area, NEC operations consist of shared rail service through the B&P Tunnel by Amtrak Northeast Regional and Acela Express passenger trains; the MARC commuter train service between the West Baltimore MARC Station and Baltimore Penn Station; and NS freight. Amtrak NEC service and some MARC Penn Line trains are powered by overhead electric wires (catenary), while other MARC and freight trains are powered by diesel-electric locomotives. MTA plans to increase the number of MARC diesel locomotives by 2019 (MTA, 2013).

A total of 145 daily trains traverse the B&P Tunnel with a maximum of 35 trains during the four-hour afternoon peak period. The majority of trains using the B&P Tunnel are Amtrak trains (61 percent), 38 percent are MARC trains, and less than 1 percent are NS freight trains. In 2014, an estimated 21,600 people passed through the tunnel daily, of which 79 percent are Amtrak passengers and 21 percent MARC passengers.

The NEC is included in multiple national efforts including the HSIPR Program (implemented by the 2009 *High Speed Rail Strategic Plan* (USDOT, 2009)), 2008 Congressional Mandate for Amtrak to Reduce Travel Time along the NEC (Public Law 110-432), *Amtrak NEC Master Plan* (Amtrak, 2010a), and the NEC FUTURE program (USDOT, Accessed September 8, 2014). The B&P Tunnel Project is a “related project” to the NEC FUTURE program and has been coordinated to be consistent with the NEC FUTURE program.

b. Baltimore Penn Station Master Plan

Amtrak's Baltimore Penn Station Master Plan is in its early planning stages that include consideration of both short- and long-term improvements. In the short term, general station improvements would include modifying existing low-level platforms to high-level platforms on certain tracks to provide level boarding. These changes would have only minimal effects to where B&P Tunnel tracks would tie into station tracks, and would impact the configuration of the proposed "Charles" Interlocking. Long-term improvements, such as a streetscape and bike lanes, would not affect or need to be incorporated into the B&P Tunnel Project.

c. West Baltimore MARC Station Improvements

MTA, in coordination with FTA, has been making incremental improvements to the existing West Baltimore MARC Station over the last several years. These improvements consist of upgrades to the facilities including addressing some ADA compliance requirements. It is not feasible to construct a fully accessible station with high level platforms and level boarding that is in compliance with ADA at the current station because it is located along a curved portion of the track. Since the existing Station cannot be completely upgraded to be ADA compliant given the existing track geometry, MTA has been reviewing options to relocate the Station to the south along a straight portion of the track; however, there has been concern from the public and MTA regarding the distance of the potential new station in relation to the existing parking lots and MTA bus lines. Amtrak and MTA have been coordinating the need to maintain service and operations for MARC passengers and the potential to straighten the curve and provide a fully accessible station at the existing location.

d. Overall Design Goals

Several goals for the B&P Tunnel Project guide the design process. The overall design for the B&P Tunnel Project will provide:

- Optimal safety;
- Minimum travel times (maximum speeds);
- Maximum passenger comfort;
- Optimum constructability; and
- Minimum long-term maintenance costs.

The alternatives must meet the Purpose and Need for the Project, as well as preserve as much existing infrastructure as possible. The alternatives should:

- Include four tracks optimized for Amtrak and MARC commuter services, with freight able to provide service on either set of tracks;
- Reduce travel time by enabling higher train speeds;
- Offer greater capacity by increasing the number of tracks and supporting double-stack container freight cars;
- Provide universal interlockings with the NEC mainline;
- Minimize substantial track modifications south of, and over, the Amtrak Gwynns Falls Bridge and through, and north of, Baltimore Penn Station;
- Serve the West Baltimore MARC Station and Baltimore Penn Station;
- Have no impact on the MTA Metro Subway tunnels and underground Penn-North or Upton Avenue/Market stations;
- Preserve the CSX track under Howard Street, Amtrak Jones Falls Bridge, Jones Falls Expressway and the Howard Street Bridge;
- Accommodate freight movement at current levels; and
- Continue operation of the two tracks through the existing tunnel during construction, with temporary outages taken as permitted by rail schedules weekday nights and on weekends during construction.

The B&P Tunnel design should not preclude implementing the alternatives of the NEC FUTURE Tier 1 DEIS (USDOT and FRA, 2015) and FEIS, which is scheduled for publication in fall 2016. The following describes applicable NEC FUTURE constraints:

- Build alternatives include four tracks through the B&P Tunnel.
- Ensure that conflicts do not occur between express through-rail traffic at Baltimore Penn Station and MARC commuter trains turning at the station. The NEC FUTURE program assumes NEC intercity operations would typically be on the railroad's west side of Baltimore Penn Station (geographical north) with MARC operations on the railroad's east side (geographical south). Two mainline tracks would feed each line on either side of the station, which is consistent with the current operating pattern. To provide operational redundancy and resiliency, either service should be able to use alternate station tracks when conditions warrant.

2. Alternative Design Criteria

Design criteria establish the standards and guidance needed to complete the engineering and design work for the proposed B&P Tunnel modernization or replacement. These criteria, standards and guidance are described in the B&P Tunnel Project *Draft Final Design Criteria Report* and form the basis for design updates during the Preliminary Engineering phase of the Project.

Table III-1 summarizes the design criteria and assumptions most relevant to the development and evaluation of B&P Tunnel alternatives. Many design criteria stipulate the components, size, clearance, and placement of design features. These criteria originate from regulations, oversight agency guidance, and knowledge of safety standards, constructability, operational parameters and maintenance needs.

Table III-1: Design Criteria and Assumptions

Design Criterion/Assumption	Description
Design Speed	Intercity Passenger Trains: Maximum 110 mph or greater Commuter Passenger Trains: Maximum 70 mph Freight Trains: Maximum 50 mph
Horizontal Geometry	Curvature should support desired maximum speeds. When a horizontal curve is located on the grade, the maximum allowed grade on the curve is reduced by 0.04 percent for each degree of horizontal curve.
Slope/Grade	Grades measured as the change in elevation in feet per 100 feet of horizontal distance shall not exceed 2 feet (or 2.000 percent grade). Avoid frequent changes in gradient.
Geotechnical	Maximize tunnel placement in bedrock to minimize the amount of soft ground and mixed-face mining required.
Mining Tunnel Portal	Minimum 50-foot depth from ground surface to top of rail for underground construction.
Tunnel Clearance	One set of tracks per bore. Design to Plate H clearances suitable for double-stack container freight operations with an operating envelope, generally, of 10 feet 8 inches wide by 20 feet 3 inches tall.
Internal Tunnel Dimensions	Approximately 30 feet diameter to allow safe passage of trains, operation and maintenance of tunnel, and meet applicable regulatory code.

Design Criterion/Assumption	Description
Fire Life/Safety	Ensure emergency ventilation and exits. Emergency ventilation provided by jet fans in the tunnel and/or ventilation facilities housing fans and other equipment. With multiple tunnels, place cross passageways connecting separate track tunnels at no more than 800 foot intervals between adjacent tunnels or use fire-resistant enclosed stairways/passageways to surface, per National Fire Protection Association (NFPA) 130. The maximum distance between emergency exits cannot exceed 2,500 feet. Provide evacuation walkways per NFPA 130.
Signals	Design based on universal interlockings at the “Charles” Interlocking on the north and the “Bridge” Interlocking on the south.
Utilities	Consider railroad alignment changes to avoid or minimize difficult or costly utility relocations.
Right-of-Way	Safety and security of the public, as well as the neighborhoods that house the railroad, require a physically separate right-of-way with a well-protected perimeter. The Project must, by location and design, prevent unauthorized intrusion into or upon the operating railroad environment, and discourage vandalism, loitering, or dumping on the right-of-way or adjacent to facilities.

3. Four Tracks

Consistent with NEC long-range planning needs identified in the NEC FUTURE program, the B&P Tunnel Alternatives propose a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station, and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

To accommodate the train volumes identified in the NEC FUTURE Tier 1 EIS ridership forecasts, all of the NEC FUTURE Action Alternatives propose four tracks through the Study Area, as well as north and south of the tunnel. To include less than four tracks would create a chokepoint in conflict with the Tier 1 NEC FUTURE Alternatives. The volumes of trains forecast for each of the NEC FUTURE Action Alternatives would not be accommodated without this increased throughput in Baltimore, including a four-track alignment through the B&P Tunnel Study Area (FRA, 2015).

4. Plate H Clearance

Two freight railroad operators, NS and CSX, currently have trackage rights to route freight along the NEC, as described in Chapter II. Amtrak practices followed for all new infrastructure projects along the entire NEC, and in accordance with national rail policy, recognize the value of designing new tunnels to allow additional and larger freight trains. Because of the long lifespan of the proposed tunnels, precluding future double-stack freight use is considered undesirable even though the proposed tunnels could not immediately be used by double-stack freight trains. Smaller dimension would govern the maximum clearance through Baltimore on the NEC for the 150-year life of the new tunnels. The build alternatives would therefore have tunnel clearances to accommodate double-stack container freight cars, known as AAR (Association of American Railroads) Plate H. The current tunnel does not accommodate Plate H equipment and could not accommodate Plate H equipment without reconstruction.

5. Four Separate Tunnel Bores

Single sets of tracks in four separate, equally-sized tunnel bores are proposed. The single track design instead of two double-track tunnels is based on several criteria: conflict-free operations, physical constraints, and constructability. FRA, in consultation with Amtrak, has determined that four tunnel bores with one track each, as opposed to two bores with two tracks each, would better meet the Project's operational and safety needs.

a. Operational and Safety Needs

Alternatives were developed and designed with the goal of conflict-free operations and service flexibility, so that the number of conflicting moves at railroad interlockings and places where two or more sets of tracks would cross (junctions) are minimized. These movements can be controlled by at-grade signaling or grade-separated crossings. A subterranean grade-separated track crossing or "duck under" is proposed as the most efficient method for preventing conflicts, and maintaining operational goals, for the new four-track B&P Tunnel. This could not be achieved if two sets of tracks were together in a single tunnel. Four separate tunnel bores also allows for service to continue if one or more tracks is out of service.

Four separate tunnel bores allows for the use of cross-passages between the tunnel bores to facilitate emergency egress through some portions of the tunnels. In the case of an emergency, passengers can exit one tunnel bore into an adjacent tunnel through cross-passages in order to safely evacuate.

b. Physical Constraints

The separation of four sets of tracks into individual tunnel bores is driven by physical constraints that include passing beneath the existing MTA Metro Subway tunnel and its Penn-North or Upton/Avenue Market stations. The depth of the subway and geotechnical ground conditions require approximately one-half tunnel diameter of separation, which would result in a railroad grade just under the design criterion of 2.000 percent. Two percent is the maximum design grade allowable to connect to the existing NEC near the West Baltimore MARC Station. A single bore with two sets of tracks would be wider and taller, resulting in an increased vertical separation between the new tunnel and the MTA Metro Subway. Lowering the tunnel to provide the additional clearance would increase the steepness of the grade and exceed the maximum for connection to the NEC at the West Baltimore MARC Station. To avoid an increase in profile grade, the connection between a new B&P Tunnel with double tracks and the existing NEC would have to be made further south of the West Baltimore MARC Station. This would increase surface impacts by requiring a longer trench excavation for the approach to the new tunnel, require modifications to the West Baltimore MARC Station, and cause more extensive impacts to adjacent communities.

c. Constructability

Another issue in the decision to construct four sets of tracks in four separate tunnel bores is constructability of the tunnel portal, where the surface transitions to the underground tunnel bore. A conservative criterion used to select the location of a tunnel portal is where ground cover above the tunnel is a minimum of 75 percent of the proposed tunnel diameter. Single tracks in a single bore would be a minimum of 50 feet below the overlying ground surface to the top of rail elevation. Two tracks per bore would be a minimum of 62 feet from top of rail elevation to the overlying ground surface. The latter would not work at the north portal because the grade would be too steep for connecting to the existing "Charles" Interlocking, which is a relatively short distance to the railroad north (geographical southeast).

The available space for the "Charles" Interlocking between the north portal and Baltimore Penn Station is a limiting factor. The limited space would also incur more surface impacts at the south portal from a longer trenched approach, which would connect to the existing NEC alignment further south. The north and south portals could be shifted further away from the existing alignment, but this would encroach further into neighborhoods and greatly increase environmental impacts to communities.

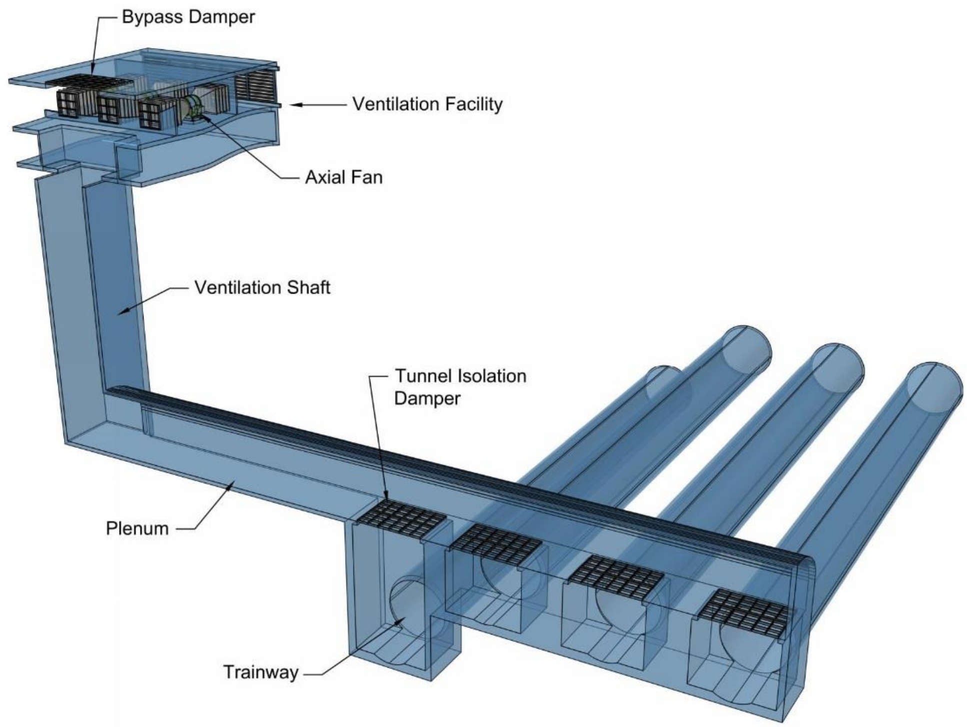
6. Ventilation Facilities

Each build alternative evaluated for the B&P Tunnel Project would require a ventilation system with three above ground ventilation facilities in order to meet current safety industry standards, particularly NFPA 130 for projected NEC FUTURE train demand and assumed two-minute minimum headway.

Ventilation facilities are an essential Life/Safety component of the B&P Tunnel Project. As shown in **Figure III-1**, the facilities are above ground structures, housing facilities essential to safely and securely perform necessary tunnel ventilation, which includes fans, operation and control equipment, fire protection equipment, and emergency exits. The purpose of the ventilation facility is to pull fresh air into the tunnel and ventilate the tunnel air to the outside; this is done through both passive (from train movement) and active (from fans) ventilation. Passive or active ventilation occurs depending on the following tunnel operations:

- Normal operation: trains run at their scheduled speed, providing sufficient ventilation through the piston effect, or “push-pull” movement. A longer ventilation plenum reduces the effectiveness of passive ventilation.
- Congested operation: trains run at slower speeds and do not provide sufficient passive ventilation, necessitating active mechanical ventilation.
- Maintenance operation: while work is being performed in the tunnel, trains would not provide sufficient passive ventilation, requiring active mechanical ventilation to provide a safe atmosphere for workers. Ventilation facilities maintain safe air quality by automatically turning on fans when sensors indicate air is nearing air quality standards for nitrogen dioxides, an indicator pollutant, regulated by the Occupational Safety and Health Administration (OSHA). The air discharged from the fan plants will meet national ambient air quality standards (NAAQS). The ventilation facilities will also remove heat generated by train operations from inside the tunnel, thereby maintaining appropriate temperatures in the tunnel for passenger trains, work crews, and emergency responders.
- Emergency operation: in a potential emergency situation, active mechanical ventilation is necessitated to control heat and smoke to provide a tenable environment for first responders and emergency egress.

Figure III-1: Ventilation Facility Schematic



The number and placement of ventilation facilities are determined by tunnel length and the necessary number of ventilation zones. Three ventilation facilities—one near the north portal, one at an intermediate location along the tunnel alignment, and one at the south portal—are needed to divide each build alternative into two ventilation zones.

The NEC FUTURE program calls for service headways of three minutes between trains through the Project corridor. Service headways are the practical average headways between trains that can be routinely achieved in the operation of the railroad. Design headways, in contrast, are the theoretical minimum headway that is permitted while achieving safe braking distance between trains. The design headway for the Project is based upon the industry practice of using approximately 67 percent of the service headway; therefore, the design headway is two minutes for the build alternatives.

The tunnels proposed under each build alternative would be approximately two miles long, and projected NEC FUTURE train demand and headway could not be met with a single ventilation zone tunnel. Current industry safety standards dictate that only one train can be permitted in a ventilation zone at a time. Train performance models show that the NEC FUTURE demand and headway requirements require two ventilation zones for the build alternatives. The interface between the two ventilation zones must be located at the point that balances travel time in each ventilation zone (considering both directions). The ventilation zone interface is not in the geographic center of the tunnel for Alternatives 3A, 3B, and 3C due to asymmetrical curvature and grades, trains entering the tunnel at differing speeds depending on their direction of travel, and braking distances.

The ventilation zones are created by installing tunnel isolation dampers in the tunnel ceiling at the interface location (**Figure III-1**). The dampers are connected to the Intermediate Ventilation Facility at the surface by a horizontal connecting tunnel (plenum) and vertical shaft. To meet practical air velocities and pressures, this conduit must have a cross-sectional area larger than 30 feet in diameter.

Preliminary engineering determined that a building sized approximately 100 feet by 200 feet and 55 to 70 feet tall would be needed for each ventilation facility. This size is provided as a rough order of magnitude; however, the dimensions of each ventilation facility will vary based on site-specific design. Since publication of the DEIS, the original height estimate of 55 feet has been increased to ensure adequate emission dispersion in compliance with air quality standards. More detailed information on current ventilation facility designs and air quality analysis is included in **Chapters IV and VI**. The facility is sized to address emergency ventilation requirements in one tunnel at a time; this emergency capacity provides sufficient capability for normal, congested, and maintenance operations in all four tunnels simultaneously.

The size of the ventilation facilities is determined by the equipment that is located within them, which is largely dictated by the size of fire that is to be controlled by the ventilation facility. The ventilation facilities must be large enough to house the required number of fans and ancillary equipment, such as silencers and dampers, as well as associated ductwork to connect to the tunnel, and space to conduct deliveries and maintenance. The ventilation facilities contain electrical equipment, such as transformers and motor starters, and provide emergency and maintenance access to the tunnels. To the greatest extent practical, the ventilation facilities would conform to local building codes and the exterior façade would complement/blend in with the built environment.

B. Preliminary Alternatives Development and Screening

The initial range of alternatives was identified based on previous studies, including the two phases of the *Baltimore's Railroad Network Study* (FRA, 2005; FRA and MDOT, 2011) and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). Alternative 16 was based on public comments received at the October 29, 2014 public open house.

FRA considered the following preliminary alternatives:

- Alternative 1: No-Build
- Alternative 2: Restore/Rehabilitate Existing B&P Tunnel
- Alternative 3: Great Circle Passenger Tunnel
- Alternative 4: Presstman Street
- Alternative 5: Route 40
- Alternative 6: Locust Point
- Alternative 7: Sports Complex
- Alternative 8: Wilson Street—Existing Tunnel
- Alternative 9: Mosher Street North
- Alternative 10: Mosher Street South
- Alternative 11: Robert Street South
- Alternative 12: Robert Street North
- Alternative 13: Wilson Street—Under Existing Tunnel
- Alternative 14: North Avenue Bridge
- Alternative 15: Gilmor Street—Existing Tunnel
- Alternative 16: North Avenue Tunnel (Alternative from Public Input)

The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel. In accordance with Council on Environmental Quality guidance (40 CFR § 1502.14(d)), Alternative 1: No-Build was not screened, as it is the baseline against which the impacts of the build alternatives are assessed. Alternative 2 was not fully evaluated because there was insufficient information at the time on the most appropriate manner of tunnel restoration and rehabilitation, future uses of the existing tunnel, and whether reconstruction of the tunnel could reasonably accommodate train operations.

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, Alternative 6: Locust Point, Alternative 7: Sports Complex, Alternative 14: North Avenue Bridge, Alternative 15: Gilmor Street, and Alternative 16: North Avenue Tunnel, were all found to have fatal flaws as summarized in **Table III-2**.

The eight remaining preliminary alternatives that did not have fatal flaws were then evaluated using criteria derived from the Project Purpose and Need, as well as functional needs identified by FRA, MDOT, and Amtrak. A total of 19 screening criteria within three categories were identified: Engineering, Operational, and Environmental. These criteria are summarized below.

1. Engineering

- Tunnel Separation: the minimum separation between existing underground structures (especially the MTA Metro Subway tunnel) and the proposed tunnel should be 30 to 40 feet.
- Tunnel Clearance: alternatives should be able to accommodate Plate H (double-stack) clearance for either twin single-track tunnels or a single double-track tunnel.
- Horizontal Curvature: alternatives should allow for design speed of 40 miles per hour or greater.
- Vertical Grade: the maximum vertical compensated grade should not exceed two percent.
- West Baltimore MARC Station Service: the alternative should be capable of serving the West Baltimore MARC Station.

- Track Grade at Baltimore Penn Station: alternatives should not alter existing track alignments at Baltimore Penn Station.
- Physical Constraints: the alternatives should not impact physical constraints, including MTA Light Rail, MTA Metro Subway, the CSX track under Howard Street, the Jones Falls Bridge, the Jones Falls Expressway, and the Howard Street Bridge.
- Separated Right-of-Way: tunnels should be on physically separate right-of-way within a well-protected perimeter.

2. Operational

- Amtrak and MARC Operations: Amtrak and MARC should be able to maintain the volume and frequency of trains through Baltimore Penn Station with no significant interruptions.
- Number of Tracks and Throughput Capacity: tunnels should include at least two tracks and a practical throughput capacity of at least 24 trains per hour per direction during and after construction. This is equivalent to a theoretical throughput capacity of 30 trains per hour or two-minute headways between trains.
- Travel Time: tunnels should reduce travel time between the northern and southern Project limits.
- NEC Operational Reliability: each track should be bi-directional and the tunnel should have universal interlocking with the NEC mainline (the ability for a train on any track to reach any other track within the limits of the interlocking).
- Movement of Freight: alternative should accommodate movement of freight at current (2015) levels.

3. Environmental

- Primary Construction Method: tunnels should be primarily bored, and should require limited cut-and-cover construction.
- Parks: impacts to parks located within the surface disturbance footprint should be avoided or minimized.
- Residential Land Uses: impacts to residential land use areas within the surface footprint should be avoided or minimized.
- Existing Bridge over Jones Falls: alternatives should utilize the existing bridge over Jones Falls.
- Minority and Low-income Communities: alternatives should avoid or minimize impacts to low-income and minority populations.
- Historic Districts and Structures: effects to historic districts and structures within the surface footprint should be avoided or minimized.

As a result of this initial screening process, twelve alternatives were eliminated from further study, and four alternatives, including Alternative 1 and Alternative 2, were retained for further engineering development and environmental evaluation. This information was presented to the public in December 2014 in the *Preliminary Alternatives Screening Report*. The results of this evaluation are shown in **Table III-2.**

Table III-2: Preliminary Alternatives Screening Results

	Alternative	Basis for Elimination or Retention
Eliminated from Study	Alternative 4: Presstman Street	• Does not meet tunnel separation requirement. • Amount of cut-and-cover construction would likely result in more severe environmental impacts relative to the other alternatives.
	Alternative 5: Route 40	• Fatal flaw: Does not utilize existing infrastructure at Baltimore Penn Station.
	Alternative 6: Locust Point	• Fatal flaw: Does not utilize existing infrastructure at Baltimore Penn Station.
	Alternative 7: Sports Complex	• Fatal flaw: Does not utilize existing infrastructure at Baltimore Penn Station.
	Alternative 8: Wilson Street—Existing Tunnel	• Requires closing the existing tunnel during construction. • Fails to avoid a key physical constraint (CSX mainline). • Likely to have substantial environmental impacts.
	Alternative 9: Mosher Street North	• Conflicts with multiple rail lines at Baltimore Penn Station. • Fails to meet NEC reliability criterion that requires two-track operation and universal interlocking with the existing NEC mainline.
	Alternative 10: Mosher Street South	• Conflicts with multiple rail lines at Baltimore Penn Station. • Fails to meet NEC reliability criterion that requires two-track operation and universal interlocking with the existing NEC mainline. • Fails to avoid a key physical constraint (CSX mainline). • Likely to have substantial environmental impacts.
	Alternative 12: Robert Street North	• Fails to avoid a key physical constraint (MTA Metro Subway rail line). • Fails to maintain existing passenger operations during construction. • May have substantial environmental impacts.
	Alternative 13: Wilson Street-Under Existing Tunnel	• Fails to avoid a key physical constraint (CSX mainline). • Fails to maintain existing passenger operations during construction. • May have substantial environmental impacts.
	Alternative 14: North Avenue Bridge	• Fails to meet profile grade requirements. • May have substantial environmental impacts.
	Alternative 15: Gilmor Street—Existing Tunnel	• Proposed geometry impossible to design or construct.
	Alternative 16: North Avenue Tunnel	• Fails to meet profile grade requirements.

	Alternative	Basis for Elimination or Retention
Retained for Further Study	Alternative 1: No-Build	• Serves as baseline for comparison to other alternatives.
	Alternative 2: Restore/Rehabilitate Existing B&P Tunnel	• Additional information needed to determine the viability of alternative; in particular, the most appropriate method of tunnel restoration or rehabilitation, and whether construction could reasonably accommodate train operations.
	Alternative 3: Great Circle Passenger Tunnel	• Does not contain a fatal flaw and meets engineering, operational and environmental criteria.
	Alternative 11: Robert Street South	• Does not contain a fatal flaw and meets engineering, operational and environmental criteria.

Based on the *Preliminary Alternatives Screening Report* screening criteria, Alternatives 3 and 11 met tunnel separation goals; had less conflict with physical constraints; maintained existing Amtrak, MARC and freight operations; maintained at least two tracks and throughput capacity of at least 24 trains per hour in each direction; supported NEC reliability; and required a potentially less-invasive primary construction method (boring instead of cut-and-cover). The remaining four alternatives (Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, Alternative 3: Great Circle Passenger Tunnel, and Alternative 11: Robert Street South) were retained for further design development and environmental evaluation.

C. Alternatives Development and Screening in the Alternatives Report

Alternatives 1, 2, 3, and 11 were carried forward from the *Preliminary Alternatives Screening Report* and underwent an additional, more detailed preliminary engineering review based on refined design goals, criteria, future rail demands, required operational services, and safety. As a result of the refined goals and more detailed engineering, described in the *Alternatives Report*, Alternatives 3 and 11 were each expanded to include several Options. These Options consisted of potential alignment shifts and other adjustments possible under the general concepts of Alternatives 3 and 11. Alternative 3 included Options A, B, and C. Alternative 11 included Options A and B. Construction methods and potential community impacts were also taken into consideration during the development of the alternatives, and included public and agency input**.**

The *Alternatives Report* evaluated and compared the alternatives in much greater detail than the *Preliminary Alternatives Screening Report*. The preliminary screening criteria were replaced with a new set of 52 evaluation criteria, which were developed to more fully evaluate the key potential impacts and benefits of each Alternative and Option summarized above. These criteria include design criteria, design goals, and environmental impacts. The overall categories are Operations, Engineering, Transportation, Cost, Construction, Right-of-Way, Community Resources, Cultural Resources, Natural Resources, and Other Environmental. (The same 52 criteria were used in the DEIS and in this FEIS, as shown in **Table III-5,** below.) The *Alternatives Report* documented the conclusion that Alternative 1: No-Build, Alternative 3 Option A (Alternative 3A), Alternative 3 Option B (Alternative 3B), and Alternative 3 Option C (Alternative 3C) were still under consideration. Alternative 2, Alternative 11 Option A, and Alternative 11 Option B were eliminated from further consideration. The reasons for elimination are described below.

1. Alternative 2: Reconstruct/Modernize Existing Tunnel

Alternative 2 would reconstruct and modernize the existing tunnel, but would not meet the Project's Purpose and Need.

Specific reasons for the elimination of Alternative 2:

- Construction would require the complete cessation of rail service along the NEC corridor, including all Amtrak service, MARC service north of the West Baltimore MARC Station, and freight service using the B&P Tunnel during construction. Service would be interrupted for an extended period of time, as long as several years.
- Design speeds would be the same as the current tunnel; horizontal geometry would remain effectively unchanged. Design speed would be as low as 30 mph, significantly lower than the other build alternatives.
- No travel time savings over existing conditions.
- Can only accommodate two tracks, which does not allow for future growth in rail service along the NEC.
- An option to build four new tracks could be accommodated by more significant widening of the existing alignment. This option was not analyzed because there is no available right-of-way and widening would require significant residential takes for the entire length of the alignment.
- An option to build four new tracks under the existing tunnel (in a two-by-two arrangement) is not feasible due to the clearance needed from the MTA Metro Subway line and geometry needed to bring the tracks together in a four-track arrangement transitioning from the tunnel portals.
- Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including the following:
    - Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction;
    - No parking along Wilson Street or Winchester Street during construction;
    - Limitations for residential and commercial access along Wilson and Winchester Streets during construction;
    - Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park;
    - Substantial residential property impacts; and
    - Severe impacts to North Avenue, central MTA Light Rail line, and CSX Main Line operations due to open-cut construction through North Avenue, the light rail, and CSX track beds.

2. Alternative 11 Option A

Alternative 11 Option A would meet the Project Purpose and Need. However, the overall impacts would not result in commensurate benefits compared to the alternatives still under consideration.

Specific reasons for the elimination of Alternative 11 Option A:

- Extensive excavation in a residential area, with the following resulting impacts:
    - 140 historic buildings impacted, more than any other Build Alternative;
    - 160 parcels impacted, more than any other Build Alternative;
    - 140 residential displacements, more than any other Build Alternative;
    - 20 business displacements, more than any other Build Alternative;
    - Loss of 120 on-street parking spaces;
    - High-level of community impacts during construction;
    - Potential environmental justice considerations—impacts within minority communities and partially within low-income communities;
    - 210 buildings with potential noise impacts, more than any other Build Alternative; and
    - Permanent closure of some sections of local streets.

- West Baltimore MARC Station shifted further south, which is a less desirable location for the station and would reduce access to parking lots and bus lines.
- Demolition of the American Ice Company building, a locally-important, community historic resource.
- Potentially severe impact to redevelopment efforts envisioned in the West Baltimore MARC Station Master Plan due to relocation of the station away from planned redevelopment properties and demolition of the American Ice Company building, a centerpiece of the plan.
- Impacts to Winterling Elementary School.

3. Alternative 11 Option B

Alternative 11 Option B would meet the Project Purpose and Need. However, the overall impacts, less operational flexibility, and high construction cost would not result in commensurate benefits compared to the alternatives still under consideration.

Specific reasons for the elimination of Alternative 11 Option B:

- Requires demolition of the entire block bounded by Edmondson Avenue, Franklin Street, Pulaski Street, and the NEC. Due to the construction, the entire block is lost to excavation and the needs of the B&P Project. There is no opportunity to use cut-and-cover construction and gain back any of the property for other uses.
- Potential environmental justice considerations: all residences and businesses taken are within minority and low income communities.
- Potentially severe impacts to the redevelopment efforts envisioned in the West Baltimore MARC Station Master Plan, including demolition of nearby properties proposed for redevelopment.
- Historic resources impacts including demolition of the American Ice Company building and other historic resources in the Midtown-Edmondson Historic District.
- Minor impacts to Mary Ann Winterling Elementary School recreational facilities.
- Reconstruction of Franklin and Mulberry Streets at a higher elevation to accommodate Alternative 11 Option B passing underneath. The higher elevation would raise Franklin and Mulberry Streets to between 10 and 20 feet, with resultant impacts including visual effects.
- Highest capital cost among build alternatives, estimated at the time of screening at $4.2 billion.
- Requires a MARC Station to be constructed below surface grade, in a cut section.
- Requires taking of a portion of the existing West Baltimore MARC Station parking lots.
- Less operational flexibility compared with other build options:
    - During construction, most work would be performed without affecting NEC operations once temporary runaround tracks and temporary viaduct are in place. However, the runaround tracks require a lower operating speed, thereby affecting train movement during the Project.
    - Alternative does not accommodate a replacement for the existing “Fulton” (partial) Interlocking. If one of the two tracks that serve the side platforms at the West Baltimore MARC Station was out-of-service, one MARC platform would not be accessible.

D. Alternatives Considered in the DEIS

Four alternatives were evaluated in the DEIS: Alternative 1: No-Build, Alternative 3A, Alternative 3B, and Alternative 3C. The build alternatives evaluated in the DEIS are described below.

1. Alternatives 3A, 3B, and 3C

Alternatives 3A, 3B, and 3C would extend on a new location along a wide arc north of the existing B&P Tunnel. The wide, continuous arc of each proposed alignment allows trains to travel at higher speeds. Alternatives 3A, 3B, and 3C were developed, in part, as a way to bypass the tight curves that slow train traffic through the existing B&P Tunnel while still maintaining platforms at Baltimore Penn Station.

Tracks in four separate tunnel bores extend between the north and south portals. The alignments would remain below ground until exiting through the tunnel portals, where the tracks would transition back to the surface. Alternatives 3A, 3B, and 3C would each involve open-cut and cut-and-cover sections to bring the tracks to the surface after exiting the tunnel portals on each end. Tracks would pass through the portals, through a cut-and-cover section, followed by an open-cut (trench) section prior to connecting with the existing NEC alignment.

There are several design elements that would apply to each of the Alternatives, as described below:

- All three Alternatives include a four-track alignment in four individual tunnel bores.
- Each Alternative would provide universal interlockings to the NEC mainline and would avoid the MTA Metro Subway while servicing the West Baltimore MARC Station.
- Each includes a “duck under” tunnel to facilitate conflict-free operations. To properly align the tracks, the southbound MARC commuter train track would duck under the two Amtrak tracks to align as the west track on the southbound platform of the West Baltimore MARC Station.
- All three Alternatives would relocate a pier of CSX (formerly B&O) Bridge Number 3.
- NEC service would continue through the existing tunnel during construction of a new alignment.
- Each Alternative would involve surface track work between the existing Baltimore Penn Station platforms and an existing retaining wall adjacent to the MTA North Avenue Light Rail transit (LRT) station. Each alignment would pierce the retaining wall to pass below the LRT tracks and station before entering into bored tunnels at the north portal.
- Each Alternative would have a maximum design speed of 100 mph. The lowest design speed along each alignment would be 50 mph.
- Each Alternative would have a maximum vertical grade of 2.0 percent. Three ventilation facilities for Alternatives 3A, 3B, and 3C would be required to ensure proper ventilation of the proposed tunnels. For each alternative, a North Ventilation Facility would be located near the north portal and a South Ventilation Facility would be located near the south portal. A third Intermediate Ventilation Facility would be connected to the bored portion of the tunnels (see **Chapter IV** for more detail).

E. Alternatives Descriptions and Refinement after the DEIS

Alternative 1: No-Build, Alternative 3A, Alternative 3B, and Alternative 3C were carried forward from the DEIS for further analysis. In response to public and agency input subsequent to the publication of the DEIS, Alternatives 3A, 3B, and 3C were refined to reduce potential social, cultural, and environmental impacts and address community concerns. Descriptions of these alternatives, including their refinement since the DEIS, are provided in this section. Potential impacts associated with the Preferred Alternative are located in **Chapter VI**.

In addition to alignment changes, refined limits-of-disturbance (LODs) were generated for each build alternative based on a narrower offset from the tracks. The LODs presented in the DEIS were developed conservatively to include additional area in order to account for potential alignment shifts. Since the engineering has been refined, the amount of area included in the LODs was reduced to provide a more accurate footprint. Reduced environmental impacts were determined as a result of the narrower LODs.

Preliminary cost estimates provided in this chapter were developed for Alternatives 3A, 3B, and 3C for comparative purposes. These preliminary estimates do not account for the preferred Intermediate Ventilation Facility site or mitigation costs. The cost estimate for Alternative 3B has been updated in **Chapter IV** to reflect a higher level of engineering detail, the preferred Intermediate Ventilation Facility site, and Project mitigation actions associated with the Preferred Alternative. More information is available for Alternative 3B than Alternatives 3A and 3C because the engineering was advanced to a greater level of detail. However, FRA assumes that the increase in cost estimates for Alternatives 3A and 3C would likely be proportionate to the increase for Alternative 3B. Therefore, the preliminary estimates are included in this chapter to provide a comparison between the build alternatives.

1. Alternative 3A

Alternative 3A would result in a total travel distance of 3.67 miles between Baltimore Penn Station and Gwynns Falls Bridge (average of the four tracks). The tunnel segment of the alignment comprises 1.92 miles of the total length. Alternative 3A, including the horizontal alignment and vertical profile, is shown in **Figure III-2**. Minor refinements were made to the alignment of Alternative 3A subsequent to publication of the DEIS. The alignment modification consisted of narrowing the track spacing near the south portal approach, which entailed only slight adjustments to the alignment presented in the DEIS. The alignment did not change through the tunnel or north portal segments. Because the alignment for Alternative 3A uses primarily existing Amtrak right-of-way for the south portal approach, further adjustment of the alignment would not have resulted in substantial reduction of impacts relative to the DEIS alignment. Accordingly, the Project Team did not pursue further refinements to the alignment.

a. North Portal

Alternative 3A would follow the existing mainline tracks in the Jones Falls Valley under the Howard Street Bridge to just before North Avenue, where the alternative diverges from the existing track alignment. The alignment continues above ground until the north portal located at the retaining wall next to the MTA North Avenue LRT Station. The alignment would travel through an existing retaining wall, adjacent to the LRT station, to begin its descent below ground. The north portal would require specialized tunnel construction techniques, such as ground improvement (reinforcement or stabilization), in advance of tunneling to allow the four tracks to pass below the LRT facilities. A North Ventilation Facility would be located approximately 300-600 feet from the north portal.

b. Tunnel Segment

Alternative 3A continues below ground in a gradual arc for 1.92 miles, traversing below primarily residential city blocks in the neighborhoods of Reservoir Hill, Penn North, Sandtown-Winchester, Bridgeview/Greenlawn, Midtown-Edmondson, and Penrose/Fayette. From the north portal, the alignment crosses under I-83 (Jones Falls Expressway), north of the intersection of Reservoir Street and Mount Royal Terrace. The alignment continues in a gradual curve north of Reservoir and Ducatel Streets, and south of the east-west portion of Whitelock Street. The alignment continues to curve southwest, crossing Whitelock Street and the intersection of North and Pennsylvania Avenues. The alignment begins to curve to the south, as the western side of the alignment runs near the east side of the Carver Vocational-Technical High School athletic field boundary. Through the tunnel segment, the depth of the alignment would reach 180 feet, with an average depth of 120 feet (from ground level to top of tunnel). An Intermediate Ventilation Facility would be located at surface level, connected to the tunnel segment by a plenum.

c. South Portal

Alternative 3A would include a south portal located within the existing P. Flanigan & Sons asphalt plant, roughly a third of a mile west of the existing B&P Tunnel south portal. The cut-and-cover and open-cut sections would be located between the P. Flanigan & Sons property and Lafayette Avenue, with some additional at-grade track work located between Lafayette and Edmondson Avenues. Further at-grade track work within Amtrak right-of-way would be located between Mulberry Street and Gwynns Falls Bridge. A new “Edmond” Interlocking, in place of the existing “Fulton” Interlocking, would be constructed south of the south portal. No modifications to the West Baltimore MARC Station would be required; consequently, no high-level platform for level boarding at the Station would be provided. The south portal would include a South Ventilation Facility.

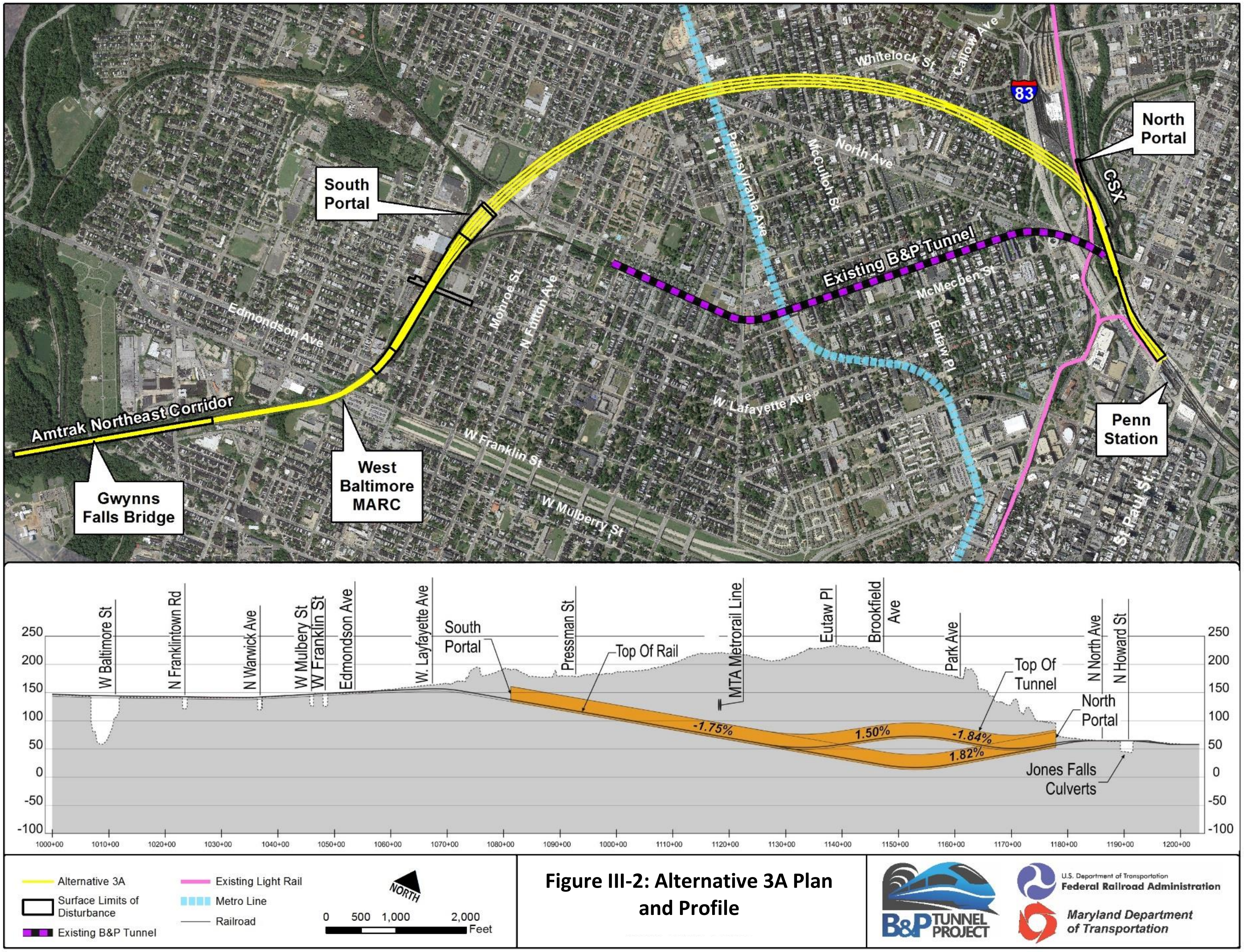


Figure III-2: Alternative 3A Plan and Profile

2. Alternative 3B

Alternative 3B was initially developed to retain the basic conceptual alignment of Alternative 3A while improving travel speeds near the south portal. The Project Team determined during preliminary engineering that travel speeds under Alternative 3A would be permanently limited to 55 mph by the existing speed-restricted curve (Curve 381) along which the West Baltimore MARC Station is currently located. Alternative 3B would address this speed restriction along Curve 381 by shifting the alignment to partially flatten the curve, thus improving operational speeds to as much as 100 mph on the inner tracks. Alternative 3B differs from 3A primarily in the location of the south portal and the southern tie-in with the existing tracks. The proposed south portal is shifted southeast by roughly 600 feet relative to Alternative 3A.

Alternative 3B would result in a total travel distance of 3.67 miles between Baltimore Penn Station and Gwynns Falls Bridge (average of the four tracks). The tunnel segment of the alignment comprises 2.00 miles of the total length. An overview of Alternative 3B, including the horizontal alignment and vertical profile, is shown in **Figure III-3**.

Since publication of the DEIS, the Project Team has refined the Alternative 3B alignment. These refinements were made to reduce environmental impacts from the alternative while still retaining the benefits of improvement to Curve 381. The horizontal and vertical alignment of the tunnel and south portal approach tracks shifted as a result of these alignment changes. The south portal approach track spacing is narrowed substantially, and the alignment shifted west in the vicinity of Franklin and Mulberry Streets. These shifts result in an alignment that stays closer to the existing right-of-way. The alignment was refined to minimize impacts to historic resources in the portal area, particularly the buildings associated with American Ice Company, the Ward Baking Company, the Atlas Safe Deposit and Storage Company Warehouse Complex, and Fire Department Engine House No. 36.

Alignment shifts in the south portal vicinity required further refinement of the tunnel alignment to meet design standards. As a result, the proposed tunnel alignment is shifted roughly 200 feet northwest of the DEIS Alternative 3B in the vicinity of where the tunnels would pass below Pennsylvania Avenue and North Avenue. The proposed tunnel alignment is also shifted south by roughly 200 feet underneath Reservoir Hill in the vicinity of Callow Avenue.

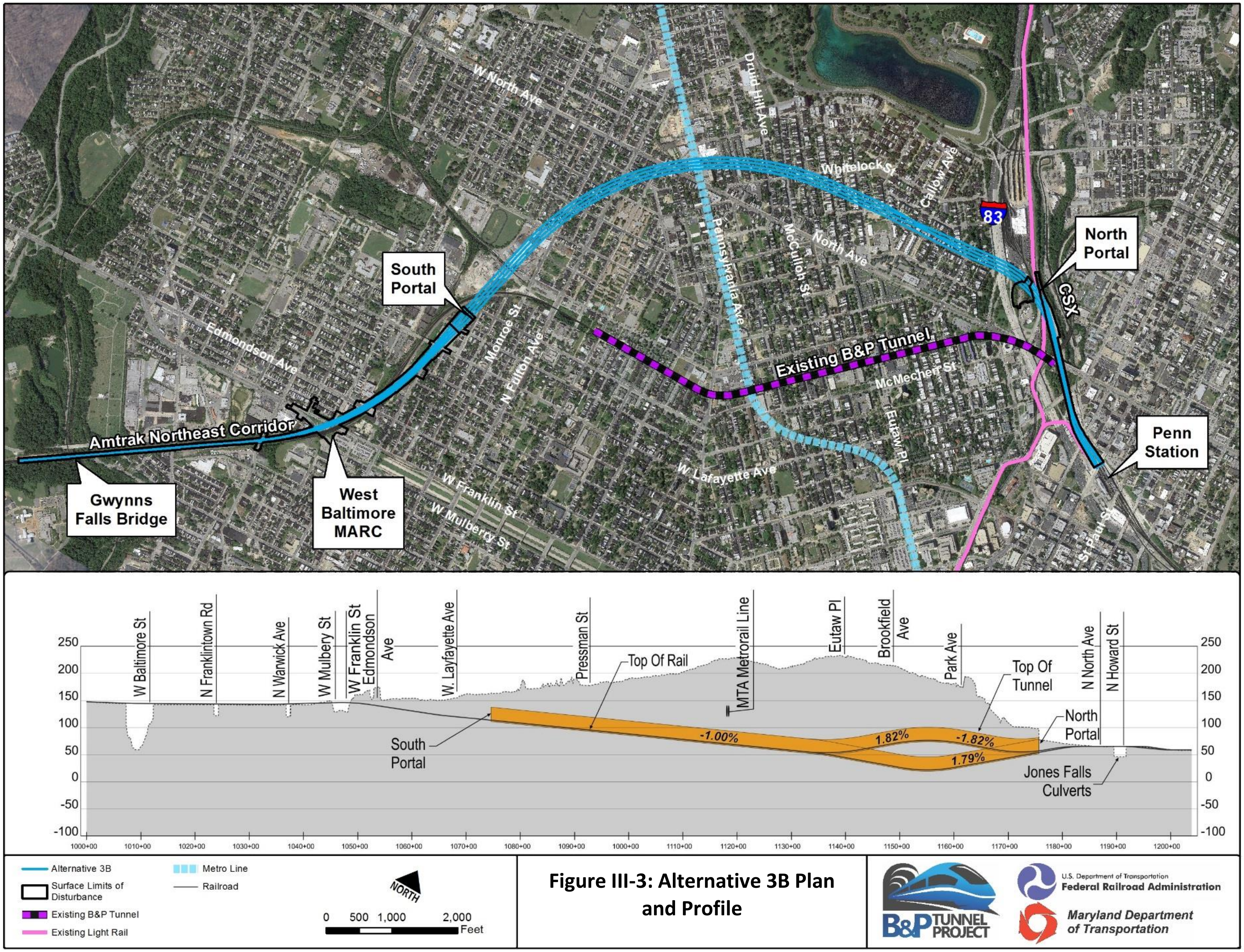


Figure III-3: Alternative 3B Plan and Profile

a. North Portal

Alternative 3B follows the existing railroad mainline track in the Jones Falls Valley under the Howard Street Bridge to just before North Avenue, where the alternative leaves the existing track alignment to begin its gradual arc. The alignment continues above ground until it reaches its north portal located at the retaining wall next to the MTA North Avenue LRT Station. The alignment would travel through an existing retaining wall adjacent to the LRT rail station to begin its descent below ground. The north portal would require specialized tunnel construction techniques, such as ground improvement, in advance of tunneling to allow the four tracks to pass below the LRT facilities. A North Ventilation Facility would be located approximately 300-600 feet from the north portal.

b. Tunnel Segment

Alternative 3B continues below ground in a gradual arc for 2.00 miles, traversing below primarily residential city blocks in the neighborhoods of Reservoir Hill, Penn North, Sandtown-Winchester, Bridgeview/Greenlawn, Midtown-Edmondson, and Penrose/Fayette. From the north portal, the alignment crosses under I-83 (Jones Falls Expressway), north of the intersection of Reservoir Street and Mount Royal Terrace. The alignment continues in a gradual curve north of Reservoir Street and Ducatel Street, and south of the east-west portion of Whitelock Street. The alignment continues to curve southwest, crossing the northeast-southwest portion of Whitelock Street and the intersection of North and Pennsylvania Avenues. The alignment continues to curve southwest, under the center of an industrial property at 1320 North Monroe Street. Through the bored tunnel segment, the depth of the alignment reaches 180 feet, with an average depth of 115 feet (from ground level to top of tunnel). An Intermediate Ventilation Facility would be located at surface level, connected to the tunnel segment by a plenum.

c. South Portal

Alternative 3B would include a south portal located southeast of the P. Flanigan & Sons asphalt plant, and southeast of the existing NEC tracks, approximately 200 feet east of the 3A south portal. The cut-and-cover and open-cut sections would be located adjacent to the existing NEC, between the proposed south portal and Lafayette Avenue. The alignment would continue on a new aerial structure over Franklin and Mulberry Streets, then return to the existing NEC right-of-way near Warwick Avenue. At-grade track work within Amtrak right-of-way would occur from near Edmondson Avenue to just south of the Gwynns Falls Bridge. A new “Edmond” Interlocking, in place of the existing “Fulton” Interlocking, would be constructed south of the permanent south portal. The West Baltimore MARC Station would be relocated slightly west of its current location to align with the new tracks, and the reduced curvature would allow for reconstructing with ADA accessible high-level platforms. Some neighborhood streets near the new portal would be closed at the new rail right-of-way and others re-established after construction. The south portal would include a South Ventilation Facility.

3. Alternative 3C

Alternative 3C was also developed to retain the basic conceptual alignment of Alternative 3A, while eliminating speed restrictions imposed by Curve 381. The Project Team determined during preliminary engineering that travel speeds under Alternative 3A would be permanently limited to 55 mph by the existing speed-restricted curve (Curve 381) along which the West Baltimore MARC Station is currently located. Alternative 3C would address this speed restriction along Curve 381 by shifting the alignment to partially flatten the curve, thus improving operational speeds to as much as 100 mph for the inner tracks. Alternative 3C differs from 3A and 3B primarily in the location of the south portal and the southern tie-in with existing tracks. The proposed south portal is shifted northwest by roughly 300 feet relative to Alternative 3A.

Alternative 3C would result in a total travel distance of 3.83 miles between Baltimore Penn Station and Gwynns Falls Bridge (average of the four tracks). The tunnel segment of the alignment comprises 2.23 miles of the total length. An overview of Alternative 3C, including the horizontal alignment and vertical profile, is shown in **Figure III-4**. Alternative 3C differs from 3A and 3B in the location of the south portal, and tie-in and alignment of the underground tunnels.

Minor refinements were made to the alignment of Alternative 3C since publication of the DEIS. Specifically, a narrowed LODs was generated, which resulted in a reduction of impacts relative to the DEIS version.

a. North Portal

Alternative 3C follows the existing railroad mainline tracks in the Jones Falls Valley under the Howard Street Bridge to just before North Avenue, where the alternative diverges from the existing alignment. The alignment continues above ground until it reaches its north portal located at the retaining wall next to the MTA North Avenue LRT Station. The alignment would travel through an existing retaining wall adjacent to the LRT station and begin its descent below ground. The north portal would include tunnel construction techniques that allow the four tracks to pass below the LRT facilities. The segment of the alignment below the MTA North Avenue LRT Station would require specialized construction, such as ground improvement, in advance of tunneling. A North Ventilation Facility would be located approximately 300-600 feet from the north portal.

b. Tunnel Segment

Alternative 3C continues below ground in a gradual arc for 2.23 miles. The alignment traverses below primarily residential city blocks in the neighborhoods of Reservoir Hill, Penn North, Easterwood, Bridgeview/Greenlawn, Midtown-Edmondson, and Penrose/Fayette. From the north portal, the alignment crosses under I-83 (Jones Falls Expressway), north of the intersection of Reservoir Street and Mount Royal Terrace. The alignment crosses under I-83 farther north than either 3A or 3B. The alignment continues in a gradual curve south of Chauncey Avenue and north of Newington Avenue and Whitelock Street. At the intersection of Madison Avenue and Brooks Lane, the alignment begins to arc to the southwest, running roughly in between Clifton Avenue and Retreat Street. The alignment curves to the south, traveling below the intersection of Payson and Baker Streets. Before entering the south portal, Alternative 3C runs fully under the center of the Carver Vocational-Technical High School athletic field. Through the tunnel segment, the depth of the alignment reaches 200 feet, with an average depth of 140 feet. An Intermediate Ventilation Facility would be located at surface level, connected to the tunnel segment by a plenum.

c. South Portal

Alternative 3C would include a south portal located within the P. Flanigan & Sons asphalt plant, just south of the athletic fields at Carver Vocational-Technical High School, and roughly a third of a mile west of the existing B&P Tunnel south portal. The cut-and-cover and open-cut sections would be located along the western edge of the P. Flanigan & Sons property, and travel south in a cut-and-cover section, parallel to the existing Amtrak right-of-way near Lafayette Avenue. The alignment would continue in an open-cut section shifted west of the NEC, south of Lafayette Avenue. The alignment would continue on a new aerial structure over Franklin and Mulberry Streets, then return to the existing NEC right-of-way near Warwick Avenue. At-grade track work within Amtrak right-of-way would occur from near Edmondson Avenue to just south of Gwynns Falls Bridge. A new “Edmond” Interlocking, in place of the existing “Fulton” Interlocking, would be constructed south of the permanent south portal. The West Baltimore MARC Station platforms would be relocated west to align with the new tracks. Some neighborhood streets near the new portal would be closed at the new rail right-of-way and others re-established after construction. The south portal would include a South Ventilation Facility.

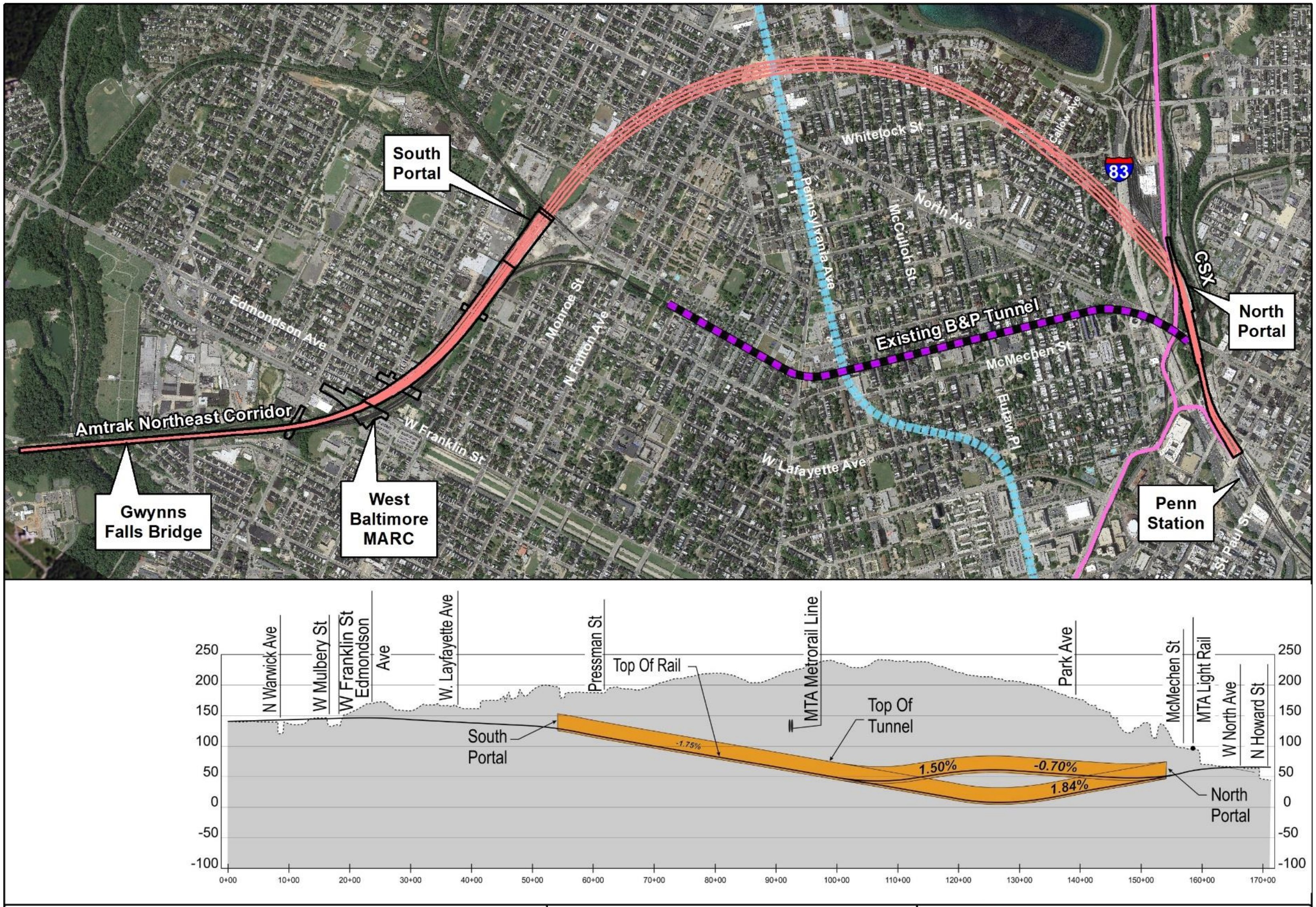


Figure III-4: Alternative 3C Plan and Profile

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Federal Railroad Administration

Maryland Department of Transportation

F. Ventilation Facilities

Each of the build alternatives would require three ventilation facilities to ensure proper ventilation of the proposed tunnels. A North Ventilation Facility would be located approximately 300-600 feet from the north portal, and a South Ventilation Facility would be at the south portal. A third Intermediate Ventilation Facility would be located at street level, connected to the bored portion of the tunnels by a vertical shaft and connecting tunnel (plenum), splitting the proposed tunnel into two unequal lengths. More detail is provided in **Section III.A.6**, and in **Chapter IV** of this FEIS.

1. Intermediate Ventilation Facility

FRA has identified a preferred site for location of an Intermediate Ventilation Facility as part of the build alternatives presented in this FEIS. This section describes the process by which Intermediate Ventilation Facility sites were identified, analyzed, and refined based on public input. The preferred Intermediate Ventilation Facility site is located at 900-940 West North Avenue in the Reservoir Hill neighborhood. The site previously proposed in the DEIS, located at Whitelock Street at Brookfield Avenue, is not currently recommended as part of the build alternatives. The 900-940 West North Avenue site is identified as preferred in this FEIS because it reduces community and historic resource impacts, and is responsive to community input.

An initial Area of Consideration for the Intermediate Ventilation Facility of each build alternative was identified as part of the preliminary engineering, based on engineering considerations. The three overlapping Areas of Consideration (corresponding with DEIS Alternatives 3A, 3B, and 3C) included an area within the Reservoir Hill neighborhood. The area was roughly bounded by Whitelock Street to the north, Ducatel Street to the south, Brookfield Avenue to the east, and Morris Street to the west. This area was developed to assist with identifying the ideal Intermediate Ventilation Facility location, from an engineering standpoint, while allowing for flexibility in the specific site proposed to minimize community impacts.

Open properties of suitable size, with no buildings within the Area of Consideration, were initially considered for the Intermediate Ventilation Facility. A suitable site was identified within this area, located at the corner of Whitelock Street and Brookfield Avenue (See **Figure III-5**). However, further analysis of the potential community, land use, and historic property impacts resulting from use of the site suggested that the Intermediate Ventilation Facility would be incompatible with the surrounding land uses and prompted evaluation of additional sites in the DEIS. Substantial community concerns related to the Whitelock Street site were received before and during the DEIS public hearings and comment period. Community members opposed the site on the grounds that it was displacing an important use (a portion of the Whitelock Community Farm), precluding future development at a central site in the neighborhood, placing an incompatible use in a primarily residential area, and would be visually incompatible with surrounding historic properties in the Reservoir Hill Historic District. In order to reduce environmental impacts and respond to community input on the Intermediate Ventilation Facility, alternate sites were developed and analyzed in addition to the Whitelock Street site.

Alternate sites located inside and outside of the original Area of Consideration were identified in the DEIS. The following sites were considered (see **Figure III-5** for site locations):

- Site 1: Druid Park Lake Drive between Brookfield Avenue and Linden Avenue
- Site 2: Druid Park Lake Drive between Brookfield Avenue and Lakeview Avenue
- Site 3: Druid Hill Avenue between Cloverdale Road and Retreat Street
- Site 4: Whitelock Street at Linden Avenue
- Site 5: Druid Hill Avenue between Whitelock Street and Clendenin Street
- Site 6: West North Avenue between Madison Avenue and McCulloh Street
- Site 7: West North Avenue between Morris Street and Madison Avenue
- Site 8: West North Avenue between Linden Avenue and Eutaw Place

- Site 9: West North Avenue between Linden Avenue and Park Avenue

A total of nine alternate sites were identified in the DEIS. Sites 1, 2, 3 and 5 were not considered further due to their distance from the optimal location for a ventilation facility near the tunnel alignment. Site 4 was potentially considered as an additional area for the site at Whitelock Street and Brookfield Avenue, but was determined not to be large enough to serve as a standalone site. Sites 1-5 would all be in close proximity to residences in Reservoir Hill, particularly Site 4 which is in the interior of the neighborhood.

Sites 6, 7, 8, and 9 were analyzed in greater detail. As a result of this stage of the analysis, Sites 6 and 7 were not considered further because the route required for the ventilation tunnels would pass diagonally through the street grid and underneath numerous homes resulting in greater disruption during construction. Site 8 (900-940 West North Avenue and 1000 Linden Avenue; hereafter referred to as “900-940 West North Avenue”) and Site 9 (850 West North Avenue) were advanced for further analysis.

The two West North Avenue sites were identified as having no active residential uses. Furthermore, public feedback indicated that sites along the periphery of the Reservoir Hill neighborhood, rather than in its interior, were considered less invasive than the Whitelock Street site. The West North Avenue corridor is also less residential in character, generally, though some residential uses do exist in the vicinity.

In general, the West North Avenue sites are much farther from the ventilation zone interface. A longer connection results in substantially higher cost and changes to the ventilation system such as increased ventilation plenum cross-section size, a greater number of ventilation fans, increased ventilation fan horsepower and associated electrical power, and reduced effectiveness of piston-action ventilation requiring the fans to run in normal operations more frequently. Furthermore, a greater amount of drill-and-blast construction leading to more severe construction-related impacts would result from a site with a longer connecting plenum with a larger cross-section.

Project engineers examined each of the two West North Avenue sites and determined that either would be feasible for use as an Intermediate Ventilation Facility site. An initial assessment of duct-tunneling options was used to help determine cost differences between the various alternatives. **Table III-3** below presents the estimated cost of each potential site with Alternative 3B, including Whitelock Street at Brookfield Avenue as a point of comparison. The cost estimates for the West North Avenue sites are based on preliminary air plenum designs shown in **Figure III-6**, below. These cost estimates were prepared during preliminary engineering based on initial estimates and are subject to revision as Project engineering advances. Cost differences between the three sites for Alternatives 3A, 3B and 3C would be of similar magnitude.

Table III-3: Estimated Cost of Intermediate Ventilation Facility Sites by Location

Location	Cost
Whitelock Street and Brookfield Avenue (DEIS Proposed Site)	$325 Million
900-940 West North Avenue (Site 8)	$590 Million
850 West North Avenue (Site 9)	$820 Million

The 900-940 North Avenue location is identified in this FEIS as the preferred site due to the greater impact of constructing a larger plenum and the subsequent substantial greater cost ($230 million) associated with 850 West North Avenue. The 900-940 West North Avenue site is therefore included in the evaluation of environmental impacts of the build alternatives in this FEIS. For a comparison of environmental impacts between 900-940 West North Avenue, 850 West North Avenue, and Whitelock Street at Brookfield Avenue Intermediate Ventilation Facility sites, see **Section VI.P**. The 900-940 West North Avenue site would require an estimated seven business displacements and demolition of one historic element that contributes to the Reservoir Hill Historic District, as assessed in the Section 4(f) Evaluation (**Chapter VI**).

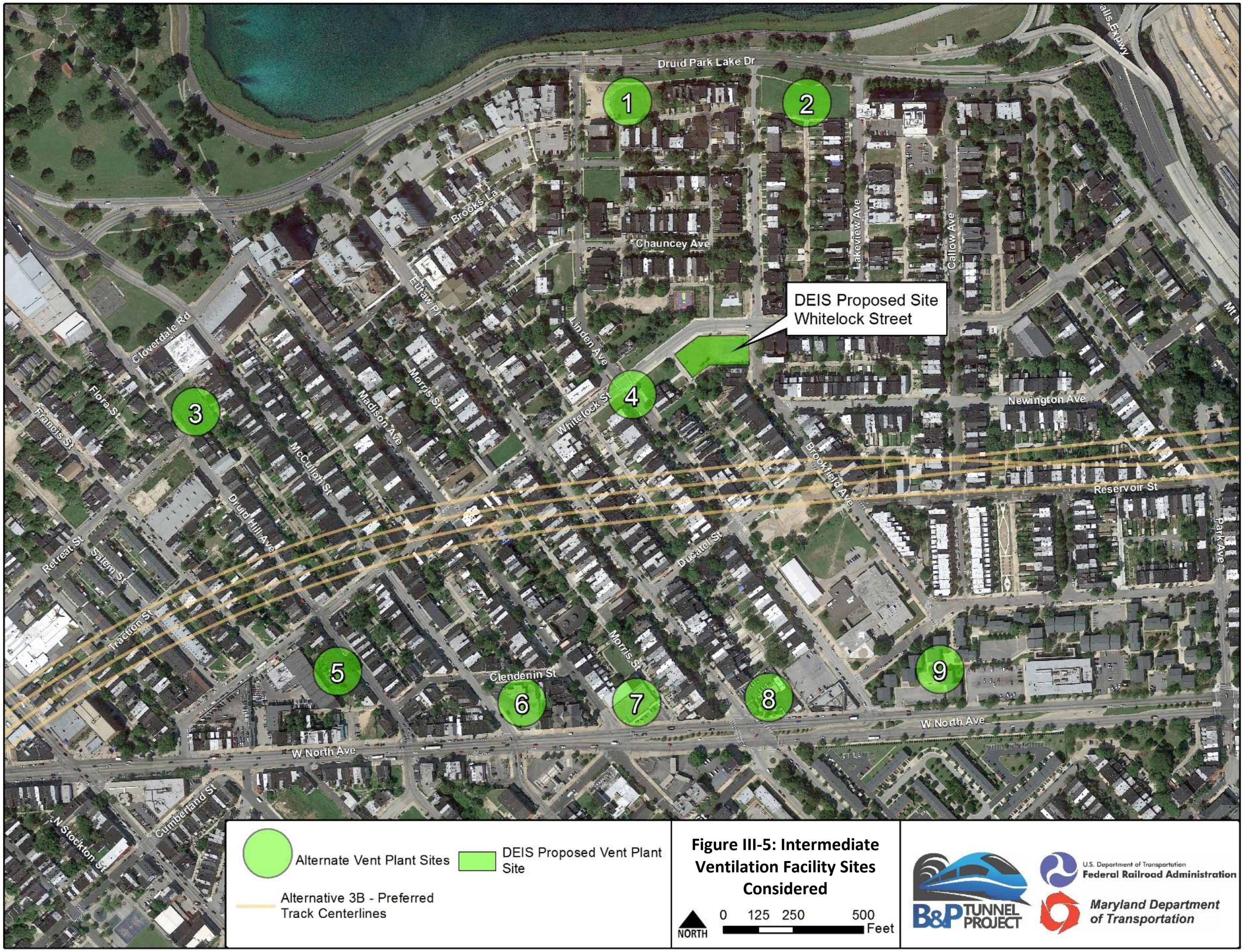
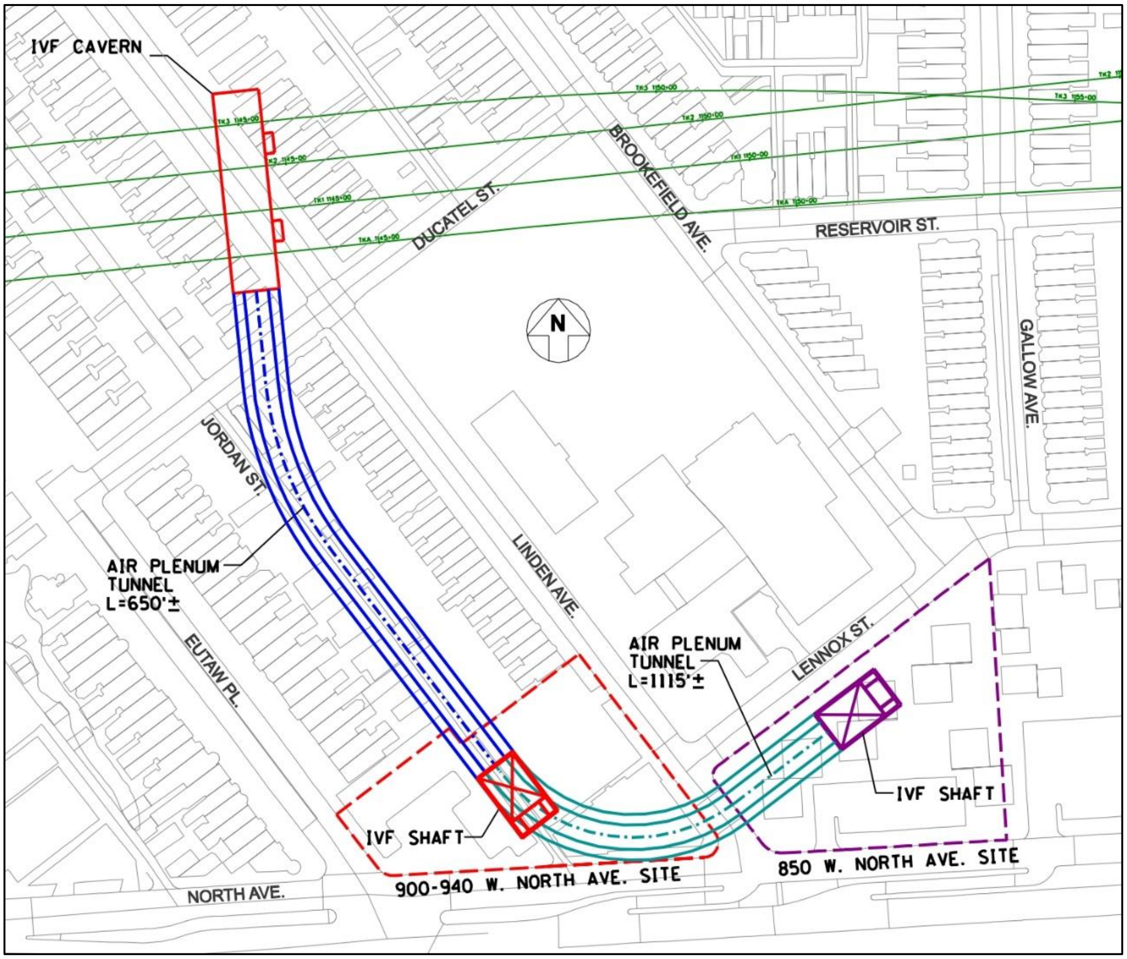


Figure III-5: Intermediate Ventilation Facility Sites Considered

Figure III-6: Alternative 3B Ventilation Plenum Concepts



2. North and South Ventilation Facilities

Each of the alternatives analyzed would need one North Ventilation Facility located at or near the north portal and one South Ventilation Facility located near the south portal. For each of the alternatives, the North Ventilation Facility would be located at a site approximately 300-600 feet from the proposed north portal, at what is currently a Baltimore City Department of Transportation (BCDOT) maintenance facility. The South Ventilation Facility would be located atop the south portal cut-and-cover section, which varies for each alternative depending on the south portal location.

G. Comparison of DEIS and Refined Alternatives

Refinements to the designs of Alternatives 3A, 3B, and 3C, completed subsequent to the DEIS versions, were undertaken with the primary aim of reducing environmental impacts associated with each build alternative and responding to public comment. In particular, project engineers sought to reduce the residential, business, community facility, and historic resource impacts that would occur near the proposed south portals associated with each build alternative. For Alternative 3A, only slight refinements were made because the minimal impacts that would have occurred under the DEIS alternative could not be substantially reduced further. For Alternative 3B, refinements in the alignment resulted in sizeable reductions in impacts – particularly to residences and historic resources. These alignment shifts were designed to reduce impacts while still retaining the travel-time benefits from flattening Curve 381. Alignment shifts for Alternative 3C were unable to be designed in a way that reduced impacts to a similar level as 3B, so only minor refinements were undertaken for Alternative 3C.

Table III-4 below provides a comparison of the alternatives presented in the DEIS and the current, refined versions of Alternatives 3A, 3B, and 3C to illustrate the impacts associated with refinements to the alternatives since the DEIS. The table displays 13 of the key impact criteria, selected from the 52 total, that helped to distinguish between the various alternatives, including environmental and operational factors.

Table III-4: Comparison of DEIS and Refined Versions of Alternatives 3A, 3B, and 3C

Criterion	Alternative 3A (DEIS)	Alternative 3A (Refined)	Alternative 3B (DEIS)	Alternative 3B (Refined)	Alternative 3C (DEIS)	Alternative 3C (Refined)
Travel Time Savings over No-Build (Min:Sec)	Acela: 1:56 Regional: 1:46 MARC: 1:26	Acela: 2:00 Regional: 1:55 MARC: 1:38	Acela: 2:32 Regional: 2:26 MARC: 1:53	Acela: 2:31 Regional: 2:32 MARC: 1:49	Acela: 2:30 Regional: 2:23 MARC: 1:44	Acela: 2:30 Regional: 2:23 MARC: 1:44
Capital Cost Estimate (YOE $)[1]	$3.7 billion	$3.8 billion	$4.0 billion	$4.0 billion	$4.2 billion	$4.2 billion
Surface Right-of-Way Acreage Required	7.8 Acres	9.4 Acres	17.1 Acres	13.2 Acres	15.9 Acres	15.1 Acres
Number of Surface Parcels Impacted[2]	19	12	107	87	93	78
Section 4(f) Properties Impacted	5 (+1 De Minimis)	6 (+1 De Minimis)	8 (+4 De Minimis)	9 (+3 De Minimis)	9 (+2 De Minimis)	10 (+2 De Minimis)
Likely Adverse Effects for Historic Properties[3]	6 (8 contributing elements impacted, including 2 building demolitions)	6 (8 contributing elements impacted, including 2 building demolitions)	8 (84 contributing historic elements impacted, including 53 building demolitions)	9 (64 contributing historic elements impacted, including 31 building demolitions)	10 (76 contributing historic elements impacted, including 31 building demolitions)	10 (66 contributing historic elements impacted, including 19 building demolitions)
Residential Displacements	0	0	46	22	24	12
Business Displacements	2	9	9	13	10	16
Community Facility Displacements	0	0	5	4	1	1
Average Depth of Tunnel	130 feet	120 feet	130 feet	115 Feet	140 Feet	140 Feet

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[1] Preliminary cost estimates for comparative purposes. Does not include mitigation or Intermediate Ventilation Facility. For updated cost estimate of the Preferred Alternative, see **Chapter IV.**

[2] Includes Intermediate Ventilation Facility. Does not include existing Amtrak right-of-way. Parcel numbers presented in the DEIS did not include ventilation facilities.

[3] Resources contributing to multiple districts are counted only once here.

Criterion	Alternative 3A (DEIS)	Alternative 3A (Refined)	Alternative 3B (DEIS)	Alternative 3B (Refined)	Alternative 3C (DEIS)	Alternative 3C (Refined)
Permanent On-Street Parking Spaces Lost	0	0	150	85	40	40
Requires Reconstruction of West Baltimore MARC Station and Facilitates High-Level Platforms at Existing Station Location	No; does not facilitate high-level platforms between Franklin and Mulberry	No; does not facilitate high-level platforms between Franklin and Mulberry	Yes; facilitates high-level platforms between Franklin and Mulberry	Yes; facilitates high-level platforms between Franklin and Mulberry	Yes; facilitates high-level platforms between Franklin and Mulberry	Yes; facilitates high-level platforms between Franklin and Mulberry
Right-of-way Impacts within Minority and Low Income Areas[4]	Minority: 5.8 Acres Low Income: 0.9 Acres	Minority: 5.8 Acres Low Income: 0.9 Acres	Minority: 15.1 Acres Low Income: 2.4 Acres	Minority: 10.8 Acres Low Income: 2.0 Acres	Minority: 13.9 Acres Low Income: 5.0 Acres	Minority: 12.5 Acres Low Income: 3.6 Acres

Note: Some of the impact values associated with DEIS alternatives have been updated from those published in the DEIS in order to provide a more complete "apples-to-apples" comparison; however, they are still based on the alignments and LODs described in the DEIS. DEIS alternatives assume the Whitelock Street IVF location, and refined alternatives include the 900-940 West North Avenue Intermediate Ventilation Facility location.

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[4] Not including roadway improvements right-of-way.

H. Evaluation and Identification of Preferred Alternative

The current build alternatives, as described above and included in **Table III-4** as the refined Alternatives 3A, 3B and 3C, will hereafter be referred to as Alternative 3A, Alternative 3B, and Alternative 3C, respectively. **Table III-5** provides a comparison of Alternative 1: No-Build, Alternative 3A, Alternative 3B, and Alternative 3C based on 52 engineering and environmental evaluation criteria developed for this Project. The potential impact data presented in this table includes the engineering refinements that Alternatives 3A, 3B, and 3C have undergone since the publication of the DEIS. **Chapters IV and VI** present more detailed information about the Preferred Alternative and the potential environmental impacts.

Subsequent to the publication of the DEIS, the three public hearings, and the end of the comment period for the DEIS, FRA, in coordination with MDOT and Amtrak, have identified a Preferred Alternative for the B&P Tunnel Project. The identification of the Preferred Alternative is based on the following: an assessment of how the alternatives meet the Purpose and Need; an assessment of rail operations, engineering, transportation, cost, and construction; an assessment of all environmental impacts; and consideration of all public and agency comments received.

The Preferred Alternative for the B&P Tunnel Project is Alternative 3B. **Chapter IV** provides a detailed description of the alternative including details such as the alignment, ventilation facilities, egress facilities, construction methods, and other details.

Alternative 3B is the Preferred Alternative because of its superior ability to meet the Project's Purpose and Need while minimizing environmental impacts to the extent possible. When compared to each of the other alternatives evaluated in this FEIS, Alternative 3B provides a superior balance of benefits and impacts. This section will summarize how Alternative 3B compares to Alternative 1: No-Build, Alternative 3A, and Alternative 3C relative to the Project Purpose and Need, environmental impacts, rail operations and engineering, and other important considerations such as cost.

1. Comparison of Preferred Alternative to Alternative 1: No-Build

Alternative 3B is superior to the No-Build because it effectively meets the Project's Purpose and Need. While there would be no environmental impacts resulting from the No-Build scenario, the alternative would not address pressing infrastructure issues on Amtrak's NEC laid out in the Purpose and Need. Alternative 3B would address every component of the Project Purpose and Need, as described in **Chapter II**. The No-Build Alternative is therefore not selected as the Preferred Alternative.

2. Comparison of Preferred Alternative to Alternative 3A

While Alternative 3A would generally result in fewer environmental impacts relative to Alternative 3B, its key disadvantages stem from its inability to improve Curve 381. Because Alternative 3A would not improve Curve 381, it would not improve travel times to the same degree as Alternative 3B. Alternative 3A would result in an average travel time savings of 2:00 (minutes: seconds) over the No-Build for Amtrak Acela service, compared to 2:31 for Alternative 3B. Additionally, an alignment retaining the existing Curve 381 would not allow for provision of high-level platforms at the West Baltimore MARC Station at its current location, due to the existing degree of curvature. Alternative 3B, on the other hand, would allow for a high-level West Baltimore MARC Station platform to be constructed at the Station's current location between Franklin and Mulberry Streets by modifying the curve. Furthermore, the improvements under Alternative 3A would effectively preclude any future improvements to the curve, limiting travel speeds and precluding ADA accessible high-level platforms through the curve for the life of the tunnel. Thus, Alternative 3B would more effectively meet the Project's stated purpose of eliminating impediments to existing and projected operations along the NEC, and reducing travel time through the B&P Tunnel and along the NEC.

Table III-5: Full FEIS Evaluation Matrix

	Criterion	Measure	Alternative 1: No-Build	Alternative 3A	Alternative 3B	Alternative 3C
Operations	**1. Travel Time Between Baltimore Penn Station and Gwynns Falls Bridge (southbound/northbound)**	Minutes: Seconds	Amtrak Acela 5:43/6:10 Amtrak Regional 5:50/6:19 MARC 5:50/6:14	Amtrak Acela 3:58/3:55 Amtrak Regional 4:15/4:05 MARC 4:32/4:17	Amtrak Acela 3:24/3:27 Amtrak Regional 3:36/3:30 MARC 4:25/4:02	Amtrak Acela 3:27/3:27 Amtrak Regional 3:46/3:37 MARC 4:33/4:04
	2. Travel Time Savings over Alternative 1 (southbound/northbound)	Minutes: Seconds	Not Applicable	Amtrak Acela 2:00 Amtrak Regional 1:55 MARC 1:38	Amtrak Acela 2:31 Amtrak Regional 2:32 MARC 1:49	Amtrak Acela 2:30 Amtrak Regional 2:23 MARC 1:44
	3. Value of Time Savings for All Passengers[5]	Dollars per year	Not Applicable	$33.8 Million per Year	$43.0 Million per Year	$42.3 Million per Year
	4. Lowest Design Speed within the Alignment	MPH	30 mph	50 mph	50 mph	50 mph
	5. Maximum Design Speed along the Alignment	MPH	75 mph	100 mph	100 mph	100 mph
	6. Average Operating Speed (southbound/northbound)	MPH	Amtrak Acela 35/34 mph Amtrak Regional 34/34 mph MARC 34/34 mph	Amtrak Acela 54/56 mph Amtrak Regional 50/52 mph MARC 44/52 mph	Amtrak Acela 65/67 mph Amtrak Regional 61/66 mph MARC 50/57 mph	Amtrak Acela 65/68 mph Amtrak Regional 59/65 mph MARC 49/57 mph

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[5] 2040 Projected ridership, 2015 dollars.

	Criterion	Measure	Alternative 1: No-Build	Alternative 3A	Alternative 3B	Alternative 3C
	7. Operational Flexibility and Reliability	High Medium Low	Low – only two tracks in common bore	High – four tracks in individual bores and the ability to platform at West Baltimore from two different tunnel tracks	High – four tracks in individual bores and the ability to platform at West Baltimore from two different tunnel tracks	High – four tracks in individual bores and the ability to platform at West Baltimore from two different tunnel tracks
	8. Meets Projected Year 2040 Level of Service for Amtrak/ MARC/ Freight	Yes/No	No – two tracks do not accommodate projected level of service; does not accommodate double-stack freight	Yes	Yes	Yes
Engineering	**9. Length of Alignment between Baltimore Penn Station and Gwynns Falls Bridge**	Miles	3.5 Miles	3.67 Miles	3.67 Miles	3.83 Miles
	10. Length of Tunnel	Miles	1.42 Miles	1.92 Miles	2.00 Miles	2.23 Miles
	11. Steepest Vertical Grade	% Grade	1.3%	2.0%	2.0%	2.0%
	12. Ability to Meet Current Project Design Criteria: Passenger (P) and Freight (F)	High Medium Low	Low (P) Low (F) Two tracks in a single bore; does not accommodate double-stack freight	High (P) Medium (F) Four tracks in individual bores; accommodates double-stack freight, steep grades for freight	High (P) Medium (F) Four tracks in individual bores; accommodates double-stack freight, steep grades for freight	High (P) Medium (F) Four tracks in individual bores; accommodates double-stack freight, steep grades for freight
	13. Depth of Tunnel	Average Depth in Feet	15-foot average depth	120-foot average depth	115-foot average depth	140-foot average depth
	14. Extent of Major Utility Relocations	Minor Moderate Major Severe	None	Major – Relocations in the general vicinity of tunnel portals	Severe – Relocations extend significant distances outside of tunnel portal areas	Major - Relocations in the general vicinity of tunnel portals

	Criterion	Measure	Alternative 1: No-Build	Alternative 3A	Alternative 3B	Alternative 3C
Transportation	**15. Estimated Number of On-Street Parking Spaces Lost**	# Spaces	0	0	85	35
	16. Requires Reconstruction of West Baltimore MARC Station	Yes/No	No	No	Yes	Yes
	17. West Baltimore MARC Station in proximity to Existing MARC Parking	Yes/No	Yes	Yes	Yes	Yes
	18. Allows for High-Level Platforms for West Baltimore MARC Station between Franklin and Mulberry Streets	Yes/No	No	No	Yes	Yes
Cost	**19. Capital Cost Estimate**[6]	YOE $	$0	$ 3.8 Billion	$4.0 billion	$ 4.2 Billion
Construction	**20. Impacts to Existing Amtrak Operations during Construction/ Rehabilitation**	Minor Moderate Major Severe	Minor – Scheduled maintenance would continue during off-peak; emergency repairs could cause significant delays. Frequency and magnitude of repairs expected to increase with time.	Minor – Most work would be performed without affecting NEC operations; only final cutover would cause minor impacts.	Moderate – Most work would be performed without affecting NEC operations; numerous track shifts and temporary cutovers would cause moderate impacts.	Moderate – Most work would be performed without affecting NEC operations; numerous track shifts and temporary cutovers would cause moderate impacts.

---

[6] Preliminary estimate for comparative purposes. Does not include preferred Intermediate Ventilation Facility site or mitigation. For more detailed cost estimate of the Preferred Alternative, see **Chapter IV**.

	Criterion	Measure	Alternative 1: No-Build	Alternative 3A	Alternative 3B	Alternative 3C
	21. Impacts to Existing MARC Operations During Construction/ Rehabilitation	Minor Moderate Severe	Minor – Scheduled maintenance would continue during off-peak; emergency repairs could cause significant delays. Frequency and magnitude of repairs expected to increase with time.	Minor – Most work would be performed without affecting NEC operations; only final cutover would cause minor impacts.	Moderate – Most work would be performed without affecting NEC operations; numerous track shifts and temporary cutovers would cause moderate impacts.	Moderate – Most work would be performed without affecting NEC operations; numerous track shifts and temporary cutovers would cause moderate impacts.
	22. Impacts to Existing LRT Operations During Construction/ Rehabilitation	Minor Moderate Severe	None – Construction would be contained within existing tunnel.	Minor – Adequate ground cover between proposed tunnel and LRT track for minimally disruptive tunneling.	Minor – Adequate ground cover between proposed tunnel and LRT track for minimally disruptive tunneling.	Minor – Adequate ground cover between proposed tunnel and LRT track for minimally disruptive tunneling.
	23. Impacts to Existing NEC Freight Rail Operations During Construction/ Rehabilitation	Minor Moderate Severe	Minor – Scheduled maintenance would continue during off peak; emergency repairs could cause significant delays. Frequency and magnitude of repairs expected to increase with time.	Minor – Most work would be performed without affecting freight operations; only final cutover would cause minor impacts.	Minor – Most work would be performed without affecting freight operations; freight trains could be scheduled around the numerous track shifts and temporary cutovers.	Minor – Most work would be performed without affecting freight operations; freight trains could be scheduled around the numerous track shifts and temporary cutovers.
	24. Temporary Community Impacts During Construction	High Medium Low	None	Low – The portal construction area is mostly located in either existing Amtrak ROW or industrial property. Predicted construction vibrations are not expected to damage buildings.	Medium – Portal construction would impact residential and industrial areas east of the existing NEC. Predicted construction vibrations are not expected to damage buildings.	Medium – Portal construction would impact residential and industrial areas west of the existing NEC. Predicted construction vibrations are not expected to damage buildings.

	Criterion	Measure	Alternative 1: No-Build	Alternative 3A	Alternative 3B	Alternative 3C
Right-of-Way (ROW)	**25. Surface Right-of-Way Acreage Required, by land use type**[7]	Acres	Residential: 0 Acres Commercial: 0 Acres Industrial: 0 Acres Other: 0 Acres **Total: 0 Acres**	Residential: 0 Acres Commercial: 1.4 Acres Industrial: 2.4 Acres Other: 5.6 Acres **Total: 9.4 Acres**	Residential: 0.5 Acres Commercial: 3.4 Acres Industrial: 2.6 Acres Other: 6.7 Acres **Total: 13.2 Acres**	Residential: 0.3 Acres Commercial: 2.1 Acres Industrial: 6.1 Acres Other: 6.6 Acres **Total: 15.1 Acres**
	26. Surface Acreage of Roadway LODs	Acres	0 Acres	1.4 Acres	5.3 Acres	6.0 Acres
	27. Estimated Surface Parcels Impacted	# of Parcels	0	12	87	78
	28. Area of Excavation (including open-cut)	Acres	0 Acres	10.0 Acres	9.4 Acres	15.3 Acres
	29. Area of Permanent Open Cut	Acres	0 Acres	6.9 Acres	7.8 Acres	11.1 Acres
Community Resources	**30. Estimated Residential Building Displacements**	# Displaced	0	0	22 (5 vacant)	12 (3 vacant)
	31. Estimated Business Displacements	# Displaced	0	9	13	16
	32. Estimated Community Facility Displacements[8]	# Displaced	0	0	4 places of worship	1 fire station

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[7] Does not include existing Amtrak ROW or city street ROW. Includes temporary and permanent, and ventilation facilities.

[8] Includes schools, churches, community centers, libraries, hospitals, police and fire stations.

	Criterion	Measure	Alternative 1: No-Build	Alternative 3A	Alternative 3B	Alternative 3C
	33. Estimated Residential Properties Impacted, but Residence Not Displaced[9]	# of Parcels	0	0	29	35
	34. Estimated Non-Residential Properties Impacted with No Displacement[3]	# of Parcels	0	5	15	18
	35. Right-of-Way Impacts within Minority Population Areas[10]	Acres	0 Acres	9.2 Acres	13.1 Acres	15.0 Acres
	36. Right-of-Way Impacts within Low Income Population Areas	Acres	0 Acres	0.2 Acres	2.2 Acres	2.8 Acres
	37. Impacts to Baltimore City's *West Baltimore MARC Station Master Plan*	Minor Moderate Severe	None – Compatible with West Baltimore MARC Station Master Plan	None – Compatible with West Baltimore MARC Station Master Plan	Moderate – Excavation would impact portions of industrial land proposed for redevelopment. MARC Station could remain between Franklin and Mulberry Streets.	Moderate – Excavation would impact portions of industrial land proposed for redevelopment. MARC Station could remain between Franklin and Mulberry Streets.

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[9] Permanent or temporary impacts to property.

[10] Calculation methodology changed since DEIS, and does not include existing Amtrak right-of-way or city streets right-of-way. Includes temporary and permanent, and ventilation facilities.

	Criterion	Measure	Alternative 1: No-Build	Alternative 3A	Alternative 3B	Alternative 3C
	38. Parks Potentially Impacted	# of Parks	0	0	0	0
	39. Estimated Area of Parkland Impacted	Acres	0 Acres	0 Acres	0 Acres	0 Acres
Cultural	**40. Adverse Effects for Historic Properties[11]**	Number of Properties (Number of Contributing Elements)	0	6 (10 contributing historic elements)	9 (82 contributing historic elements)	10 (120 contributing historic elements)
	41. Area of Surface Disturbance within Historic District	Acres	0 Acres	15.6 Acres –, Greater Rosemont, Baltimore & Potomac Railroad, Reservoir Hill and Midtown-Edmondson Historic Districts	21.2 Acres – Baltimore & Potomac Railroad, Edmondson Avenue, Greater Rosemont, Reservoir Hill and Midtown-Edmondson Historic Districts	21.0 Acres – Baltimore & Potomac Railroad, Edmondson Avenue, Greater Rosemont, Reservoir Hill and Midtown-Edmondson Districts
	42. Known Archaeological Resource Sites Impacted	# of Sites	0	0	0	0
Natural Resources	**43. Stream Impacts**	Linear Feet	0 Feet	0 Feet	0 Feet	0 Feet
	44. Wetland Impacts	Acres	0 Acres	0 Acres	0 Acres	0 Acres
	45. Estimated Street Trees Impacted	# of Trees	0	1	74	35

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[11] Contributing historic elements are counted once per district

	Criterion	Measure	Alternative 1: No-Build	Alternative 3A	Alternative 3B	Alternative 3C
	46. Forested Land Impacted	Acres	0 Acres	1.5 Acres	2.4 Acres	1.9 Acres
	47. 100-Year Floodplain Impact	Acres	0 Acres	3.4 Acres	3.4 Acres	3.4 Acres
Other Environmental	**48. Use of Section 4(f) Properties**	Number of Properties	0	6 (+1 De Minimis)	9 (+ 3 De Minimis)	10 (+2 De Minimis)
	49. Hazardous Materials Sites Identified	# of Low, Medium, and High Priority Sites (and Total #)	N/A	57 Low, 29 Med, 6 High (92 Total)	67 Low, 38 Medium, 7 High (112 Total)	92 Low, 52 Medium, 9 High (153 Total)
	50. Estimated Number of Buildings with Potential Noise Impacts	# of Buildings, Moderate or Severe	0 Severe 0 Moderate	0 Severe 254 Moderate	141 Severe 297 Moderate	111 Severe 979 Moderate
	51. Estimated Number of Sites with Potential Vibration Impacts	# of Sites	0 Vibration 12 Ground-Borne Noise	0 Vibration 156 Ground-Borne Noise	0 Vibration 449 Ground-Borne Noise	0 Vibration 168 Ground-Borne Noise
	52. Permanent Negative Visual Impacts	Low Medium High	None	Medium – would construct new south tunnel portal and South Ventilation Facility in primarily industrial area and construct an Intermediate Ventilation Facility in Reservoir Hill residential area	High – would construct new south tunnel portal, South Ventilation Facility, and new tracks in residential area and construct a new Intermediate Ventilation Facility in Reservoir Hill residential area	High – would construct new south tunnel portal, South Ventilation Facility, and new tracks in residential area and construct a new Intermediate Ventilation Facility in Reservoir Hill residential area

Alternative 3A would not result in any residential or community facility displacements, but it would require nine business displacements, including substantial impact to the P. Flanigan & Sons asphalt plant, a major local employer. Alternative 3B, in contrast, would impact an estimated 13 businesses, but would avoid the P. Flanigan & Sons property. Alternative 3A, at an estimated capital cost of $3.8 billion, would also be somewhat less expensive than Alternative 3B, which is estimated at $4.0 billion[12] and would require somewhat less surface right-of-way, at 9.4 acres relative to the Alternative 3B estimate of 13.2 acres.

Alternative 3A would less effectively meet the overall Purpose and Need of the Project compared to Alternative 3B. Alternative 3B would more effectively reduce travel time through the B&P Tunnel and along the NEC, better accommodate existing and projected travel demand for intercity and commuter passenger services, and would eliminate an impediment to existing and projected operations along the NEC in accordance with the Purpose and Need. Therefore, Alternative 3A has not been identified as the Preferred Alternative.

3. Comparison of Preferred Alternative to Alternative 3C

Unlike Alternative 3A, Alternative 3C includes some of the key advantages of Alternative 3B in meeting the Project Purpose and Need. It would improve Curve 381, thus improving travel times and allowing for accessible high-level platforms at the West Baltimore MARC Station.

However, Alternative 3C would result in more detrimental overall environmental impacts compared to Alternative 3B – particularly in regards to historic resources – even though Alternative 3B would result in more impacts with respect to certain resources than Alternative 3C. Alternative 3C would require demolition of buildings at Ward Baking Company building and Fire Department Engine Company No. 36, two important historic properties located in the south portal vicinity. The Section 106 consulting parties, in consultation with FRA, have expressed a strong preference towards prioritizing the preservation of these historic properties. Alternative 3B, in contrast, would avoid impacts to the Ward Baking Company and Fire Department Engine Co. 36 buildings.

Alternative 3C would impact an estimated 12 residences; which is fewer than the estimated 22 residential impacts for Alternative 3B. Alternative 3C would require 16 business impacts, including major impacts to the P. Flanigan & Sons asphalt plant. Alternative 3B, in contrast, would impact 13 businesses and avoid major impacts to the P. Flanigan & Sons property. Alternative 3C would require somewhat higher surface right-of-way, an estimated 15.1 acres compared to approximately 13.2 acres for Alternative 3B.

Alternative 3C would be somewhat more expensive than Alternative 3B, with an estimated capital cost of $4.2 billion compared to $4.0 billion for Alternative 3B.

In summary, Alternative 3C would meet the stated Project Purpose and Need to a similar degree as Alternative 3B. When all of the impacts described above and in **Chapter VI** are taken into account, despite the advantage of having fewer residential impacts, the overall environmental impacts from Alternative 3C are more severe than Alternative 3B. The impacts to individually eligible historic properties that would occur under Alternative 3C are particularly severe. Alternative 3C is also the most expensive of the three build alternatives considered. Thus, Alternative 3C has not been selected as the Preferred Alternative.

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[12] Based on preliminary estimate for comparative purposes, not including the preferred Intermediate Ventilation Facility site and mitigation. See **Chapter IV** for more detailed cost estimate of the Preferred Alternative.

4. Selection of Alternative 3B as the Preferred Alternative

Based on the considerations described above, FRA has selected Alternative 3B as the Preferred Alternative for the B&P Tunnel Project. Alternative 3B meets the Project Purpose and Need better than Alternative 1: No-Build and Alternative 3A by allowing for superior travel times along the NEC though the Study Area, better accommodating existing and projected travel demand for intercity and commuter passenger services, and more effectively eliminating impediments to existing and projected operations along the NEC. Although Alternative 3B and Alternative 3C would similarly meet the Project Purpose and Need, Alternative 3B has less severe overall environmental impacts compared to Alternative 3C.

Alternative 3B may be subject to further engineering refinement through the remainder of the preliminary design process and, ultimately, final design and implementation. Ongoing mitigation efforts and coordination with agencies and the public will proceed based on the Alternative 3B alignment, and mitigation measures will be designed to address the potential impacts resulting from Alternative 3B.

Table III-6 below highlights several of the primary disadvantages of Alternative 3A and Alternative 3C which informed the selection of Alternative 3B as the Preferred Alternative. While all of the impacts and engineering considerations described in this FEIS were considered in the identification of the Preferred Alternative, the factors included in **Table III-6** help to illustrate the important distinctions between the three build alternatives that played a key role in the decision-making process. **Table III-6** illustrates these key factors that led to the identification of Alternative 3B as the Preferred Alternative.

Table III-6: **Comparison of Key Criteria for Alternatives 3A, 3B (Preferred) and 3C**

	Alternative 3A	**Preferred Alternative (Alternative 3B)**	**Alternative 3C**
Travel Time Savings over No-Build (Min:Sec average of northbound and southbound)	Acela: 2:00 Regional: 1:55 MARC: 1:38	Acela: 2:31 Regional: 2:32 MARC: 1:49	Acela: 2:30 Regional: 2:23 MARC: 1:44
Allows for high-level platforms for West Baltimore MARC Station between Franklin and Mulberry Streets	No	Yes	Yes
Capital Cost (YOE $)*	$3.8 billion	$4.0 billion	$4.2 billion
Ward Baking Company (historic property)	Preserved	Preserved	Demolished
Fire Department Engine Company No. 36 (historic property)	Preserved	Preserved	Demolished
P. Flanigan & Sons, Inc. business and jobs	Substantial Impact	Minimal Impact	Substantial Impact
Surface right-of-way required	9.4 acres	13.2 acres	15.1 acres

* Preliminary estimate for comparative purposes. Does not include preferred Intermediate Ventilation Facility site or mitigation. For more detailed cost estimate of the Preferred Alternative, see **Chapter IV**.

Chapter IV

B&P TUNNEL PROJECT

Preferred Alternative

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Maryland Department of Transportation

IV. PREFERRED ALTERNATIVE

A. Introduction

Chapter III of this FEIS describes the evaluation of the four alternatives that were included in the B&P Tunnel DEIS: Alternative 1: No-Build, and three build alternatives – 3A, 3B, and 3C. As described in **Chapter III**, the three build alternatives were further refined after the DEIS. These refinements were based upon public comments and input; a desire to reduce, minimize, or eliminate impacts; and more detailed engineering analysis. FRA compared these refined build alternatives (along with Alternative 1: No-Build), and identified Alternative 3B as the Preferred Alternative. For a comparison of alternatives, please refer to FEIS **Chapter III, Section G**, Evaluation and Identification of Preferred Alternative. **Chapter VI** of this FEIS includes information on the impacts to the existing environment of the alternatives.

In summary, Alternative 3B best meets the Project's Purpose and Need while minimizing overall environmental impacts to the extent possible. Specifically, Alternative 3B replaces the aging infrastructure of the existing B&P Tunnel, which is nearing the end of its useful life; most improves travel time and reliability in the portion of the NEC between Penn Station, Baltimore, and the Gwynns Falls Bridge; and provides for an improved West Baltimore MARC Station that will be ADA compliant, all at a lower cost than the next ranked Alternative 3C.

The purpose of **Chapter IV** is to provide a detailed description of the Preferred Alternative. **Section B** of this chapter provides an overview of the Preferred Alternative. Subsequent sections of this chapter provide greater detail on the alignment, ventilation facilities, emergency egress, West Baltimore MARC Station, associated roadway and bridge improvements, major utilities to be reconstructed, construction methods to be employed, and a capital cost estimate.

B. Overview

The Preferred Alternative is 3.67 miles in length from the Amtrak Gwynns Falls Bridge to Baltimore Penn Station. From the south, the Preferred Alternative begins along the same horizontal and vertical alignment as the existing Amtrak tracks on the Gwynns Falls Bridge, traverses the same alignment as the existing Amtrak tracks, crosses over Franklintown Road and Warwick Avenue on reconstructed bridges, extends across Mulberry and Franklin Streets on a new railroad bridge, and then begins to descend into an open cut section. The open cut section then transitions into the south tunnel portal west of Payson Street between Riggs Avenue and Mosher Street. The Preferred Alternative then proceeds for 2.00 miles in tunnel bores following a generally semi-circular alignment to the north tunnel portal, located east of I-83 (Jones Falls Expressway) and immediately east of the Baltimore Central Light Rail alignment. The Preferred Alternative then proceeds into the Baltimore Penn Station area at the same elevation as the existing tracks on the north side of Penn Station. A more detailed description of the alignment of the Preferred Alternative follows in **Section C**. The Preferred Alternative will also include a newly constructed West Baltimore MARC Station, described in further detail in **Section F**.

A graphic depiction of the overall horizontal alignment of the Preferred Alternative, as well as a profile showing the vertical alignment of the Preferred Alternative, is provided on **Figure IV-1**.

The Preferred Alternative includes three ventilation facilities required to meet current industry safety standards. Ventilation facilities would be located at the south tunnel portal, near the north tunnel portal, and at an intermediate location in the vicinity of West North Avenue and Linden Avenue. For a more detailed description of the need for the ventilation facilities, please refer to **Chapter III, Section A** of the FEIS. A more detailed description of the ventilation facilities follows in **Section D** of this chapter.

Figures IV-2 through **IV-8** depict the Preferred Alternative.

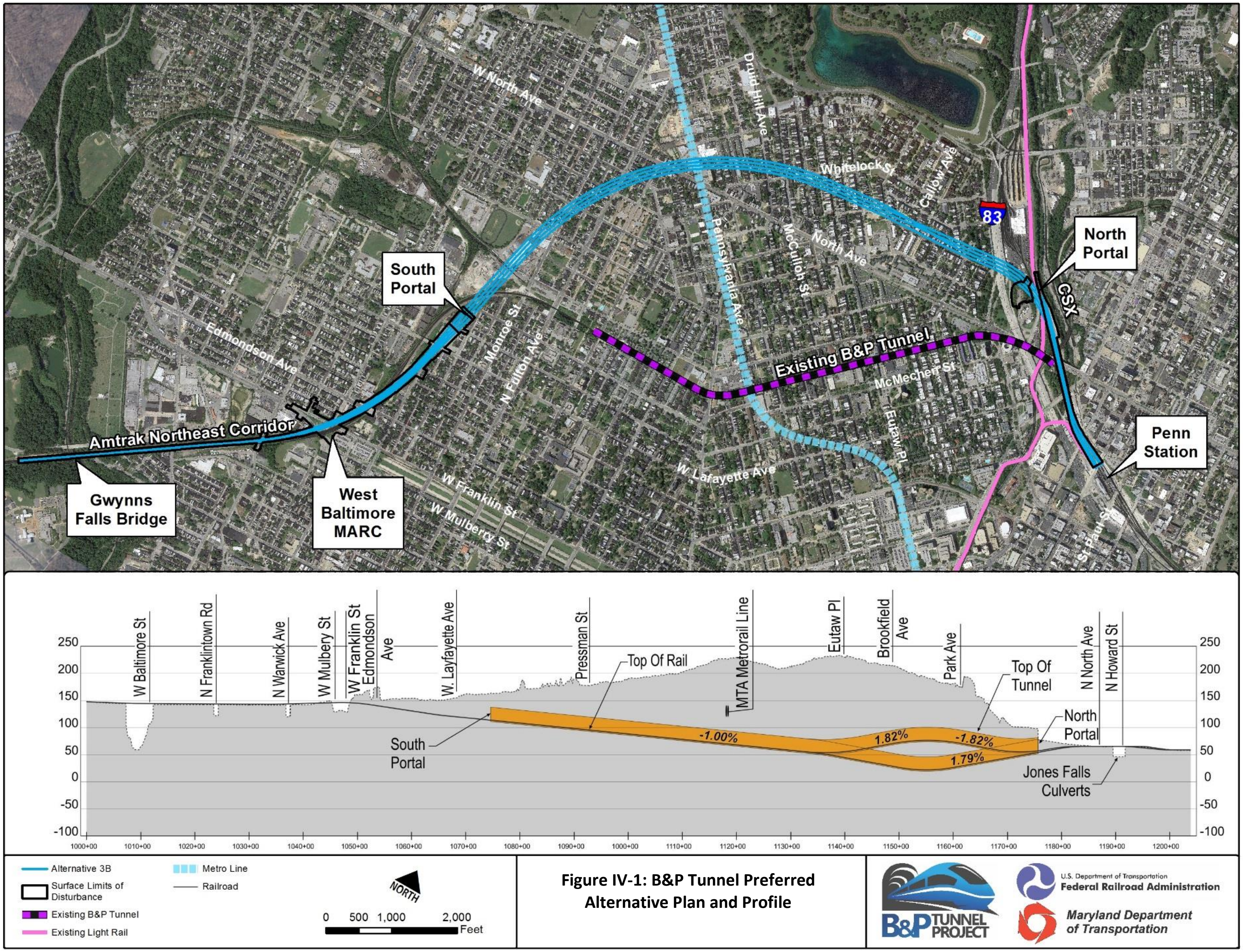
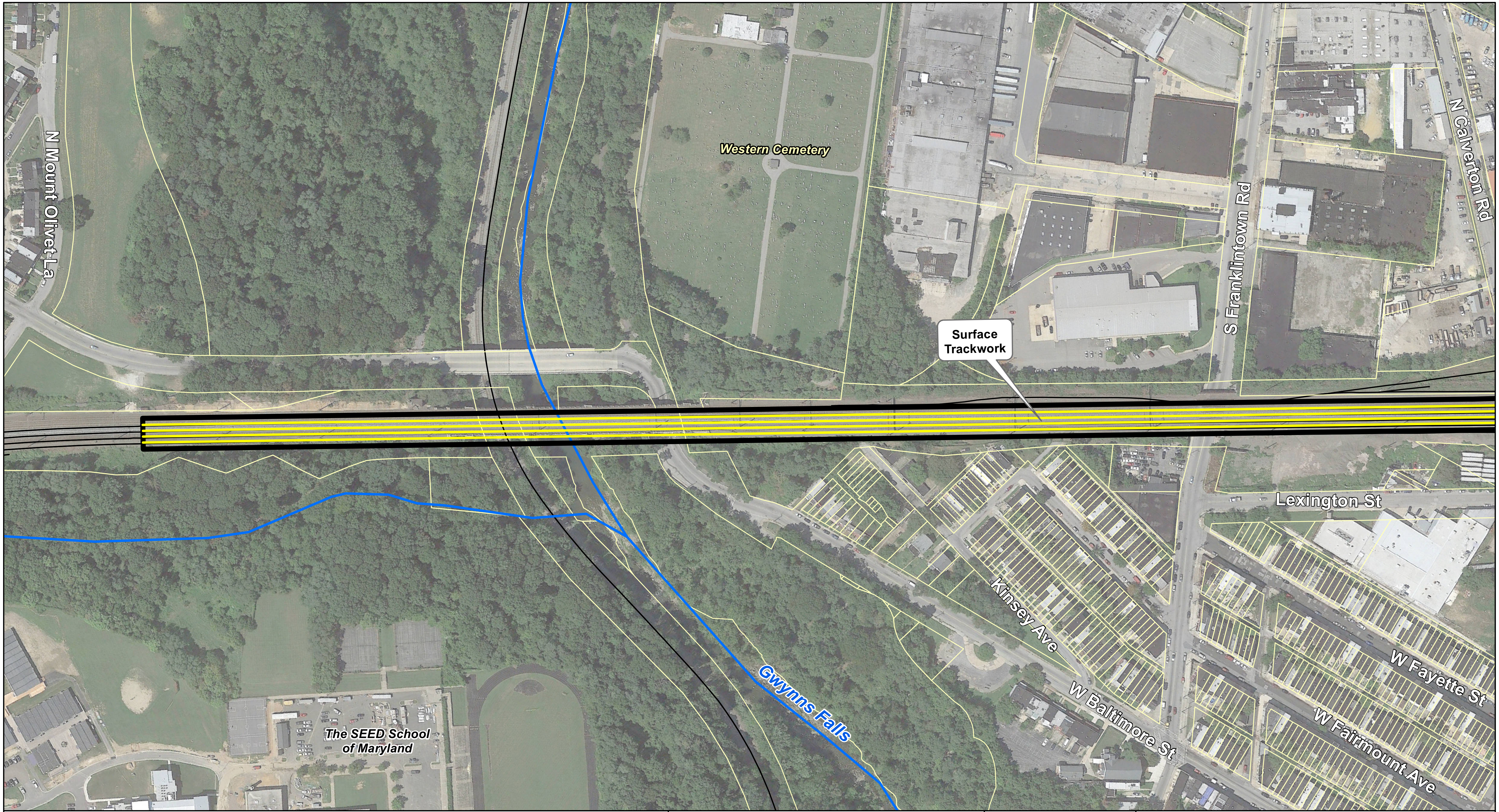


Figure IV-1: B&P Tunnel Preferred Alternative Plan and Profile



—	Alternative 3B - Preferred
▭	Limits of Surface Disturbance
⬚	Bored Tunnel
▨	Proposed Ventilation Facilities
▪ ▪ ▪	Proposed Noise Barriers
—	Existing Rail
—	Existing Light Rail
- - -	Existing Metro Subway
—	Existing Rail
—	Streams

B&P Tunnel Project
Figure IV-2
FEIS Preferred Alternative
Plan Sheet 1 of 7

NORTH

1 inch = 200 feet

0 100 200 400 Feet

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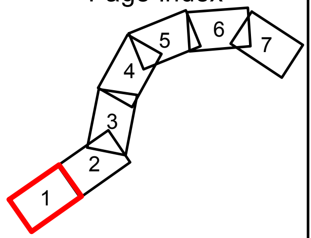

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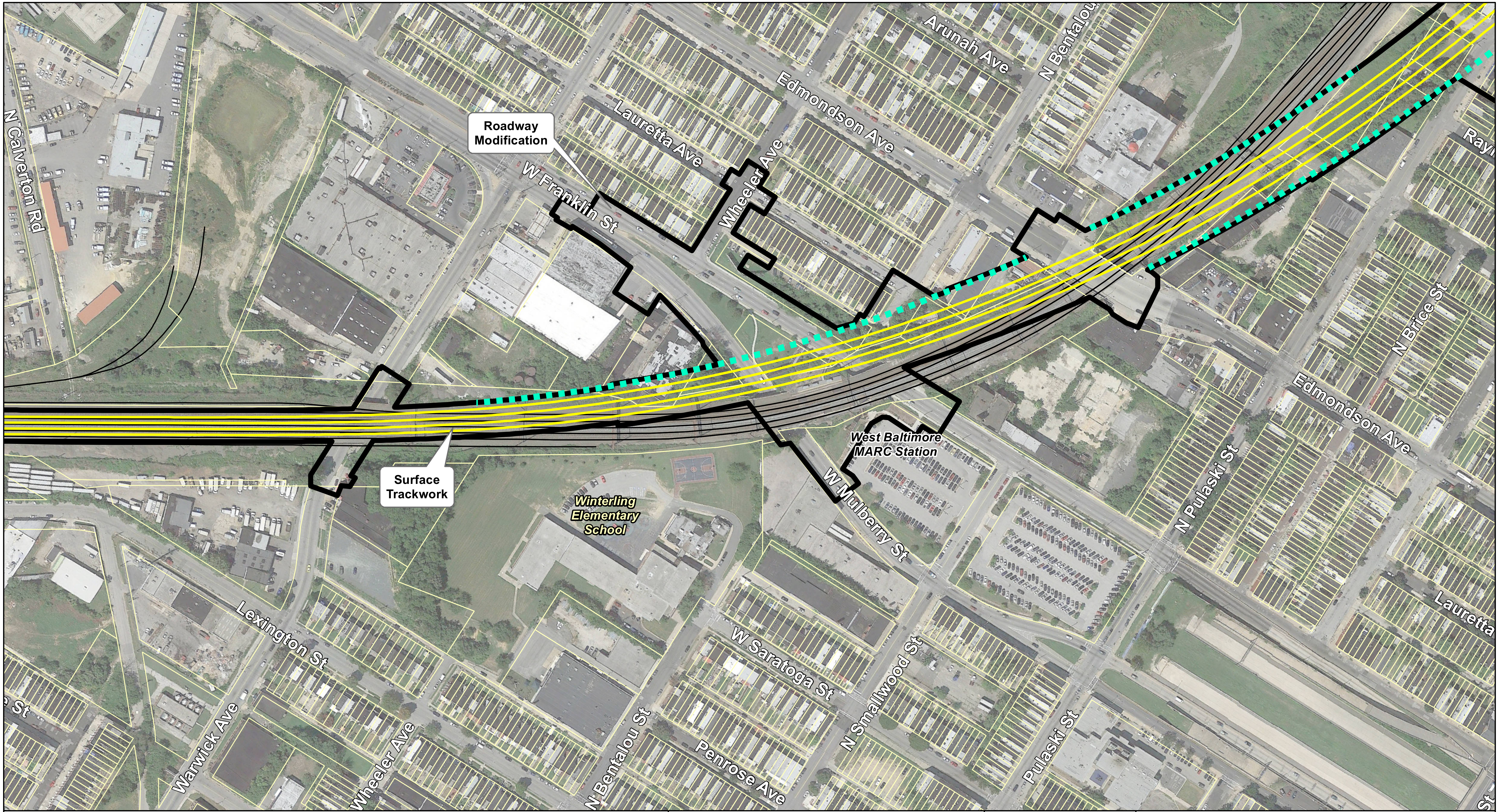

Alternative 3B - Preferred

Limits of Surface Disturbance

Bored Tunnel

Proposed Ventilation Facilities

Proposed Noise Barriers

Existing Rail

Existing Light Rail

Existing Metro Subway

Existing Rail

Streams

B&P Tunnel Project
Figure IV-3
FEIS Preferred Alternative
Plan Sheet 2 of 7

NORTH

1 inch = 200 feet

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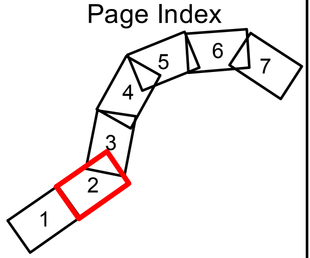

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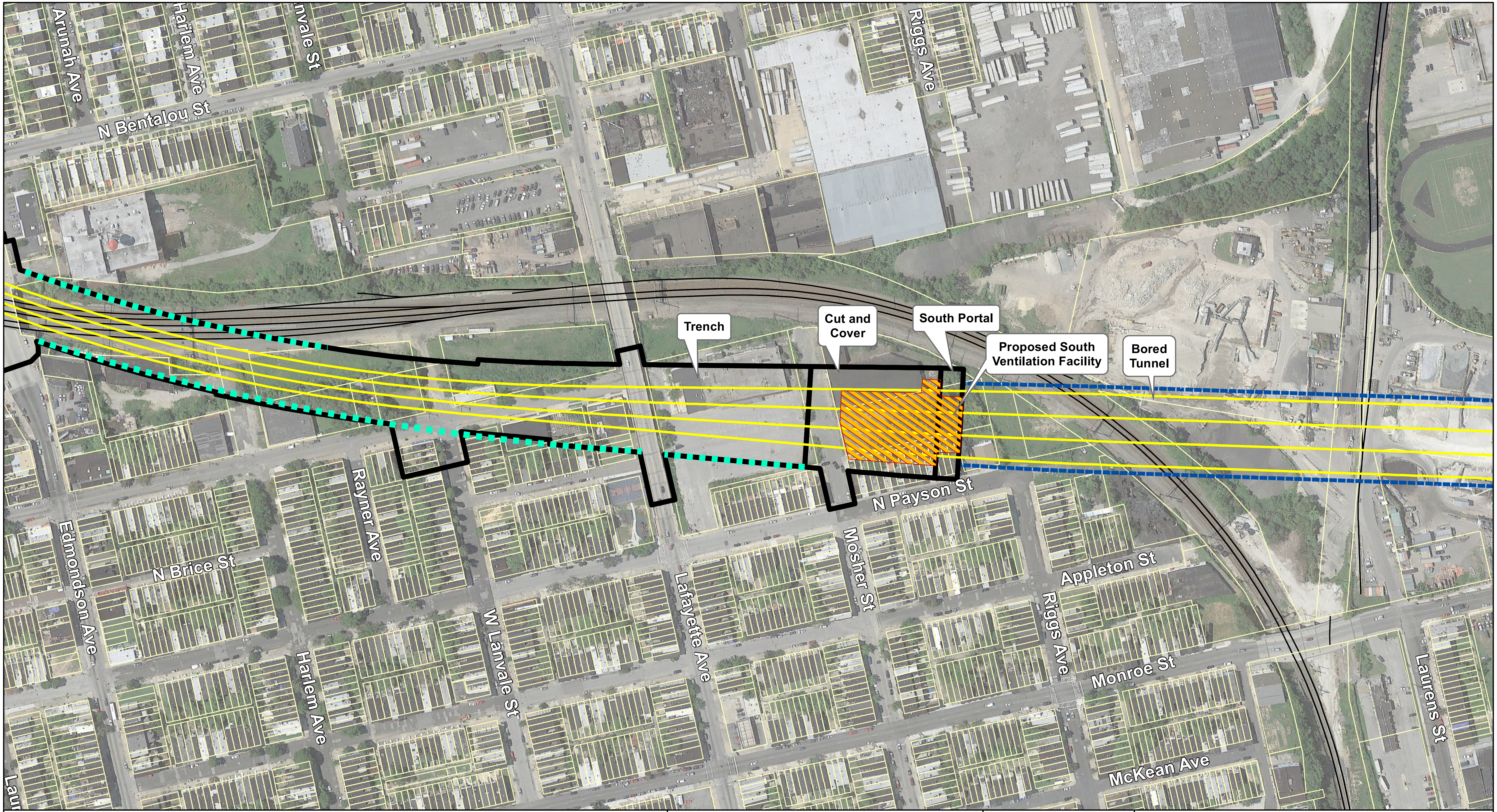


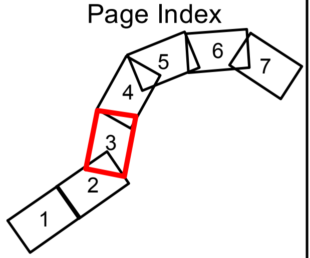
Alternative 3B - Preferred
Limits of Surface Disturbance
Bored Tunnel
▨ Proposed Ventilation Facilities
Proposed Noise Barriers
Existing Rail
Existing Light Rail
Existing Metro Subway
Existing Rail
Streams

B&P Tunnel Project
Figure IV-4
FEIS Preferred Alternative
Plan Sheet 3 of 7

NORTH

1 inch = 200 feet

0 100 200 400 Feet



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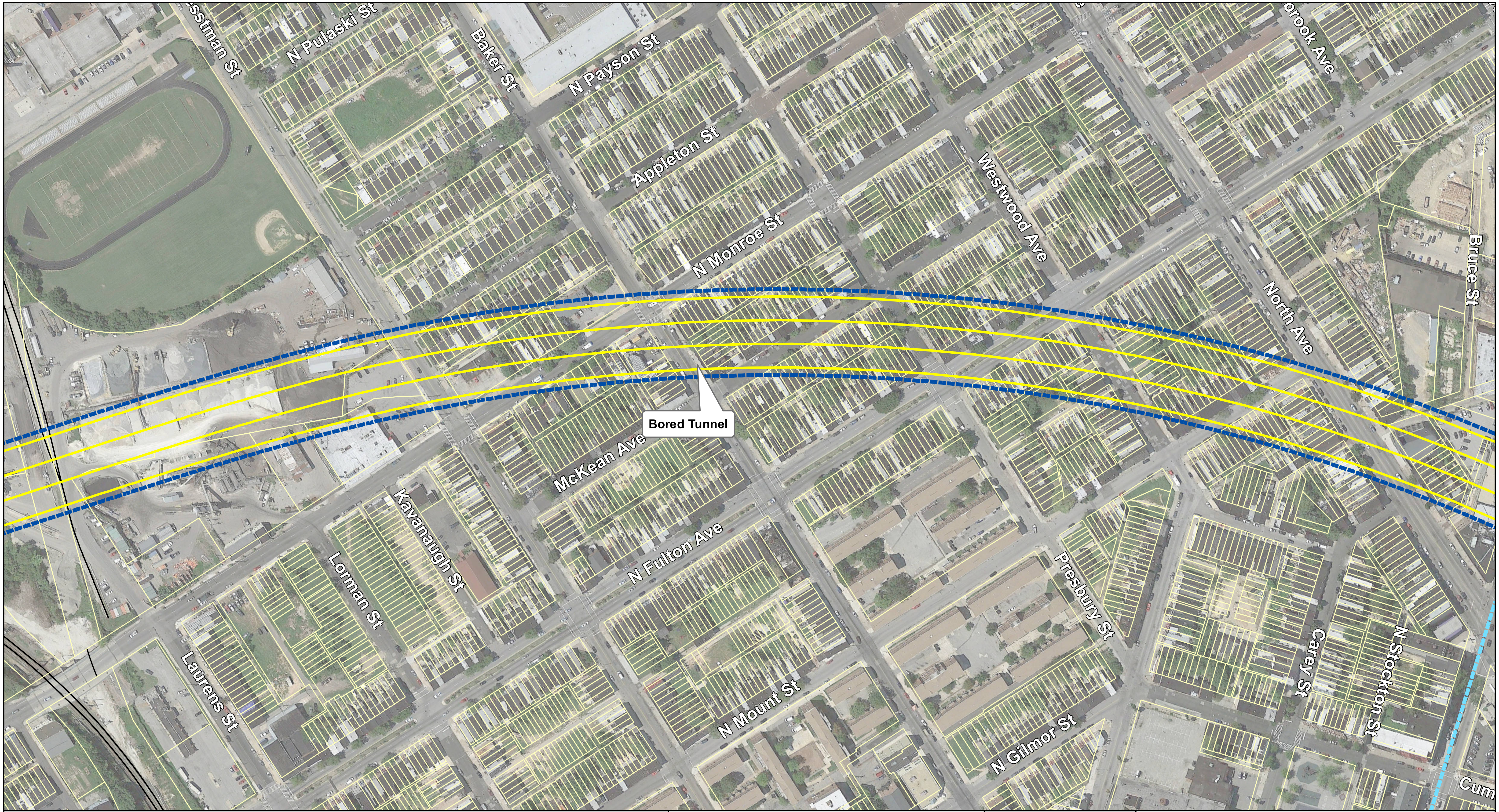


Alternative 3B - Preferred

Limits of Surface Disturbance

Bored Tunnel

Proposed Ventilation Facilities

Proposed Noise Barriers

Existing Rail

Existing Light Rail

Existing Metro Subway

Existing Rail

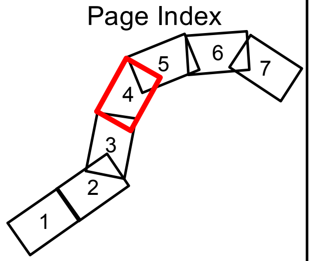
Streams

B&P Tunnel Project
Figure IV-5
FEIS Preferred Alternative
Plan Sheet 4 of 7

NORTH

1 inch = 200 feet

0 100 200 400 Feet



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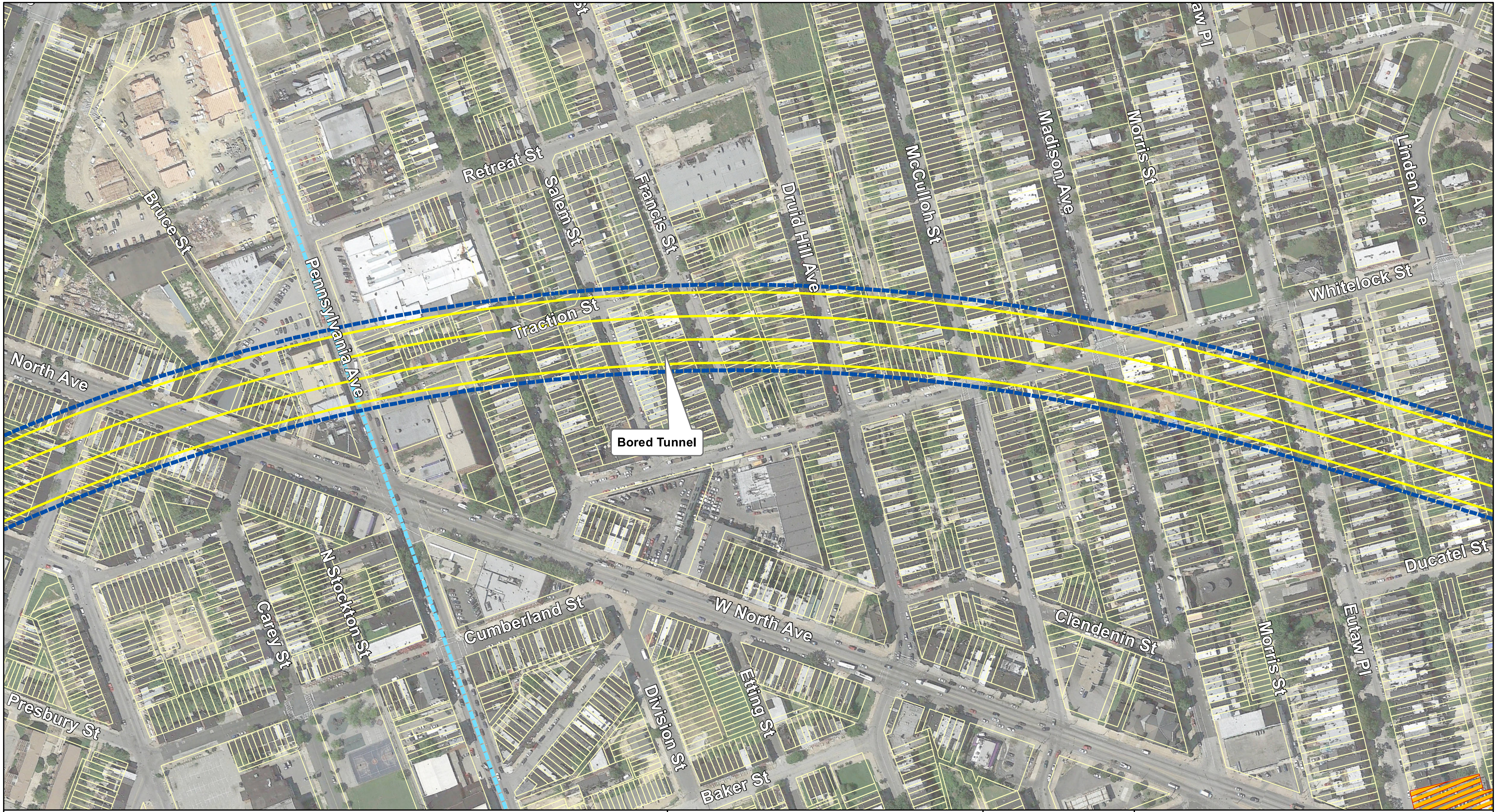

— Alternative 3B - Preferred
▭ Limits of Surface Disturbance
▭ Bored Tunnel
▨ Proposed Ventilation Facilities
▪▪▪ Proposed Noise Barriers
— Existing Rail
— Existing Light Rail
--- Existing Metro Subway
— Existing Rail
— Streams

B&P Tunnel Project
Figure IV-6
FEIS Preferred Alternative
Plan Sheet 5 of 7

1 inch = 200 feet

NORTH

0 100 200 400 Feet

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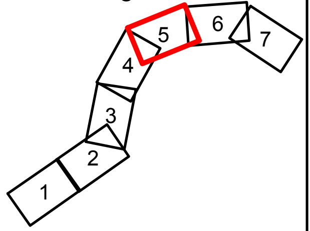

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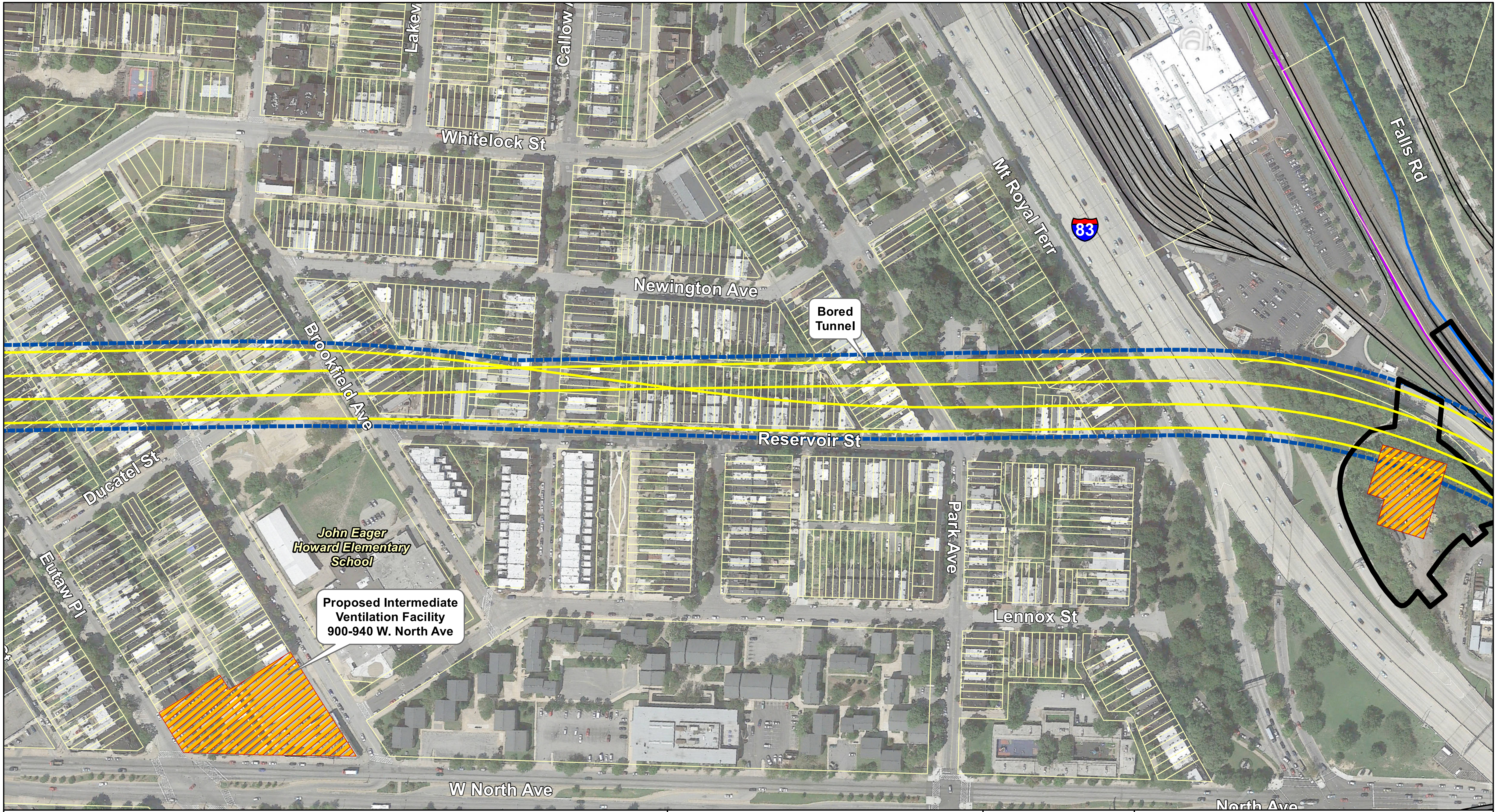

- Alternative 3B - Preferred
- Limits of Surface Disturbance
- Bored Tunnel
- ▨ Proposed Ventilation Facilities
- Proposed Noise Barriers
- Existing Rail
- Existing Light Rail
- Existing Metro Subway
- Existing Rail
- Streams

NORTH

B&P Tunnel Project
Figure IV-7
FEIS Preferred Alternative
Plan Sheet 6 of 7

1 inch = 200 feet

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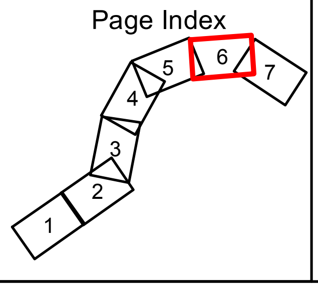

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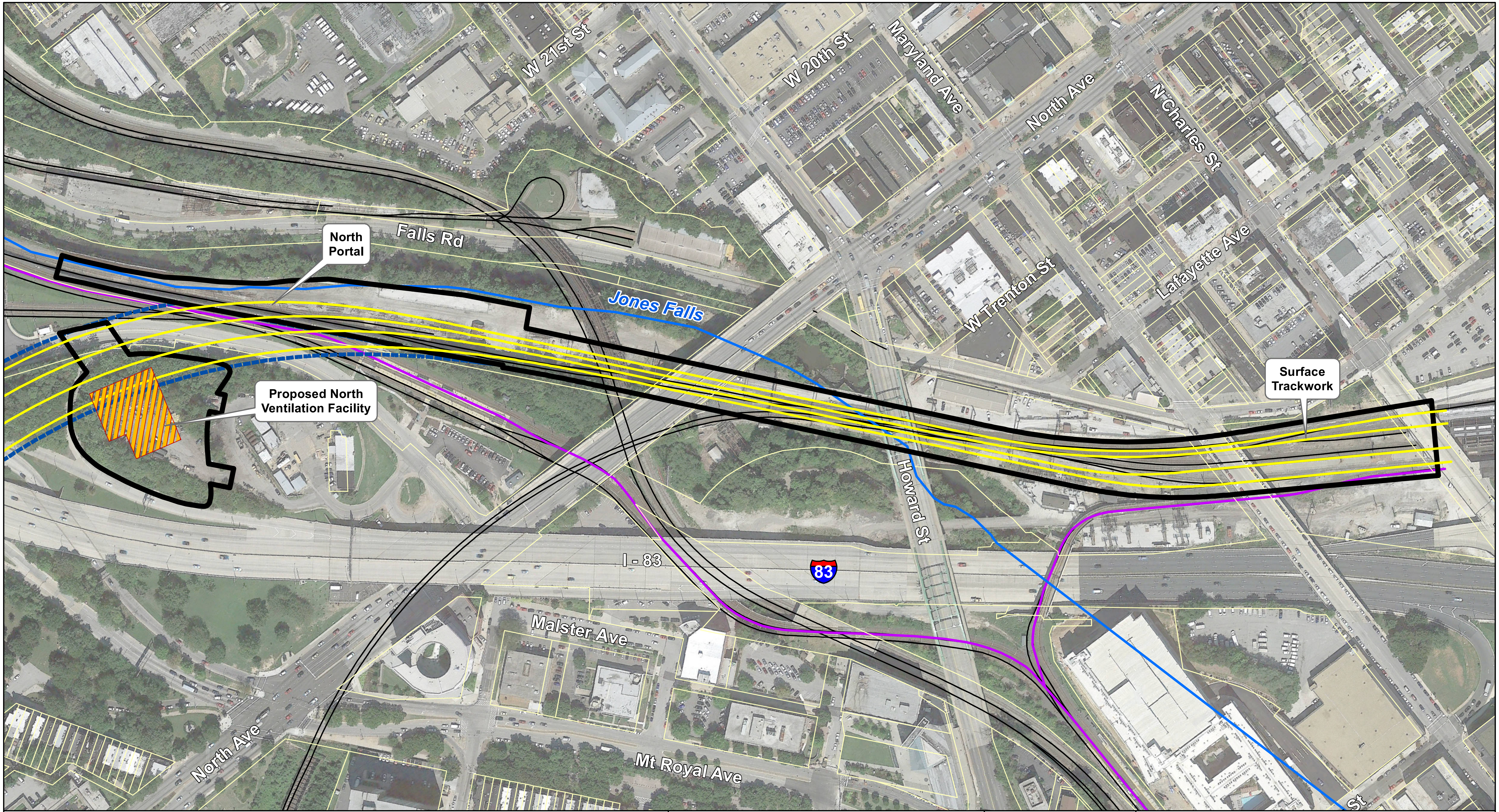


- Alternative 3B - Preferred
- Limits of Surface Disturbance
- Bored Tunnel
- ▨ Proposed Ventilation Facilities
- Proposed Noise Barriers
- Existing Rail
- Existing Light Rail
- Existing Metro Subway
- Existing Rail
- Streams

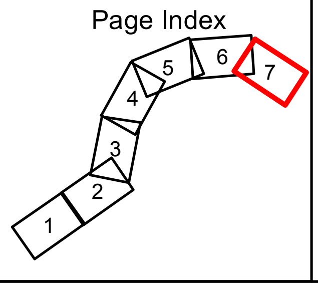
B&P Tunnel Project
Figure IV-8
FEIS Preferred Alternative
Plan Sheet 7 of 7

NORTH

1 inch = 200 feet

0 100 200 400
Feet

Page Index



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The Preferred Alternative will consist of four new tracks. For the tunnel portion of the alignment, each of the tracks would occupy a new, separately bored tunnel. The four tracks are consistent with FRA and Amtrak policy to meet the long-term rail passenger needs in the NEC, as well as to provide increased reliability for passenger rail operations for both Amtrak and MARC. The Preferred Alternative will improve travel time by 2 minutes, 31 seconds for Amtrak and 1 minute, 49 seconds for MARC, as compared to existing conditions and the No Build Alternative.

Amtrak owns the existing B&P Tunnel and existing right-of-way and track outside the tunnel, and would retain ownership of portions of the existing NEC not specifically needed for the Preferred Alternative. There has been no decision, as part of the Preferred Alternative, as to the disposition of either the existing tunnel or excess track and right-of-way. The existing tunnel would be closed and reserved for potential future rail transportation use. Amtrak would make decisions on disposition in the future, upon implementation of the Preferred Alternative.

The capital cost estimate to construct the Preferred Alternative is $4.52 billion in escalated dollars, assuming construction completion in 2025. This capital cost estimate is based on Alternative 3B, as refined, due to further engineering refinements after the DEIS. The cost has increased from the preliminary capital cost estimates provided in **Chapter III** due to more detailed engineering, and includes the cost of the preferred Intermediate Ventilation Facility. A more detailed breakdown of the capital cost estimate can be found in **Section J**.

C. Alignment

1. Description

Figures IV-2 through **IV-8** depict the Preferred Alternative. Detailed plan and profile drawings for the Preferred Alternative are provided in **Appendix J**. The plan drawings show the centerline locations of each of the four tracks, track geometry, areas of open cut, cut-and-cover areas, and tunnel portal locations. The horizontal alignment shown on the plan drawings are overlaid on Baltimore City topographic mapping to demonstrate the location of the Preferred Alternative alignment with respect to above-ground land use such as buildings, roadways, and open space. The profile drawings depict the vertical profile of the track alignments and vertical geometry. The profile drawings show the relationship of the tracks to existing ground elevations at-grade, on aerial structure, or below-grade. By using the plan and profile drawings together the tunnel location and depth at any point along the alignment can be determined.

a. Gwynns Falls Bridge to Warwick Avenue

The Preferred Alternative alignment meets the existing four tracks of the Amtrak NEC at both the same horizontal and vertical location south of the Gwynns Falls Bridge. As the alignment proceeds north, it crosses over the Gwynns Falls and Baltimore Street on an existing bridge. Continuing northward, the horizontal location of the four tracks occupies the existing track alignment but the elevation gently rises one to two feet above the existing tracks. The alignment crosses over Franklintown Road and Warwick Avenue on reconstructed four-track railroad bridges, necessary to accommodate the new bridge interlocking at this location instead of on the Gwynns Falls Bridge.

b. Warwick Avenue to Franklin Street

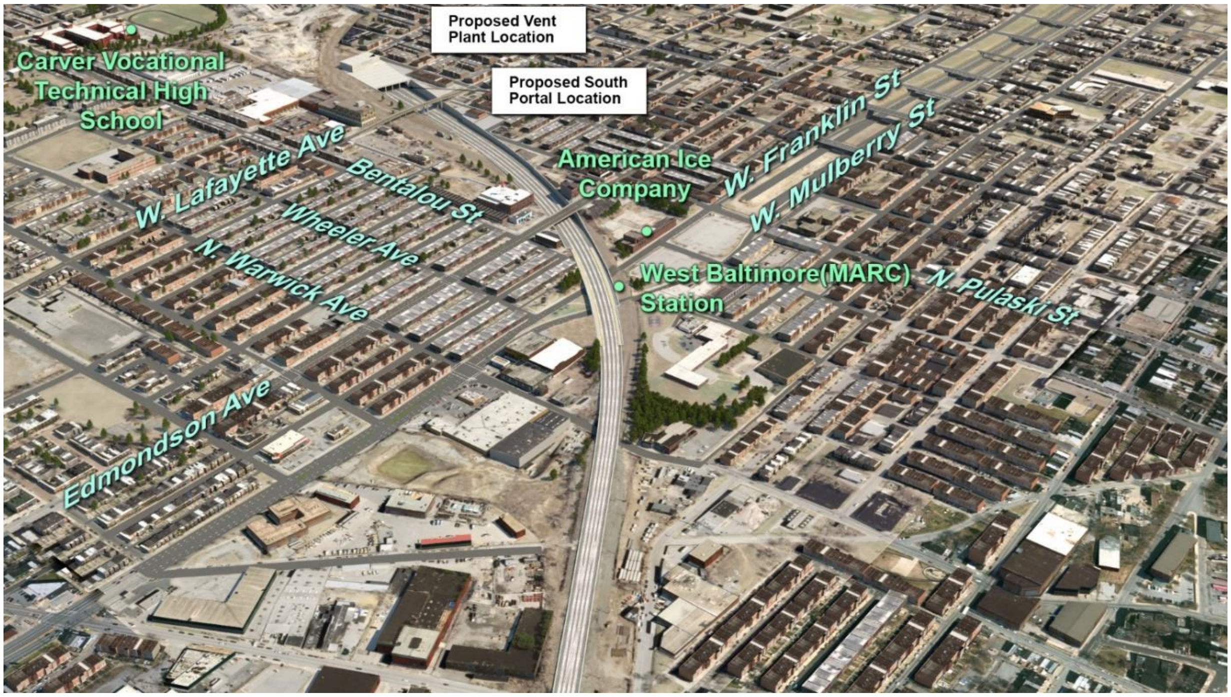
After crossing Warwick Avenue, the alignment begins to shift to the west of the existing alignment and crosses Mulberry Street and Franklin Street on a new bridge structure. At this point, the alignment is approximately 100 feet west of the existing alignment. This change in horizontal alignment creates a much straighter curve when compared to Curve 381 on the existing alignment, resulting in an increase in speed and the ability to include a high-level platform at a newly constructed West Baltimore MARC Station, to be located in approximately the same location as the current West Baltimore MARC Station.

c. Franklin Street to South Tunnel Portal

After crossing Franklin Street, the alignment begins to transition into the tunnel portion of the Preferred Alternative. This portion of the alignment is in an open cut section that crosses under Edmondson Avenue and Lafayette Avenue to the Tunnel Portal west of Payson Street, between Riggs Avenue and Mosher Street. In this portion of the Preferred Alternative, the horizontal alignment shifts from west of the existing tracks to east of the existing tracks, crossing the existing tracks just north of Edmondson Avenue.

A rendering of the alignment between Franklintown Road and the south portal is shown on **Figure IV-9.**

Figure IV-9: Alignment between Franklintown Road and the South Portal



d. Tunnel Portion

The tunnel portion of the Preferred Alternative is 2.00 miles in length in a generally semi-circular alignment, running between the south and north portals. From the south portal, the tunnel alignment traverses under the property of P. Flanigan and Sons Asphalt Plant, and then predominantly under the residential communities of Penrose/Fayette, Midtown-Edmondson, Bridgeview/Greenlawn, Easterwood, Penn North, and Reservoir Hill.

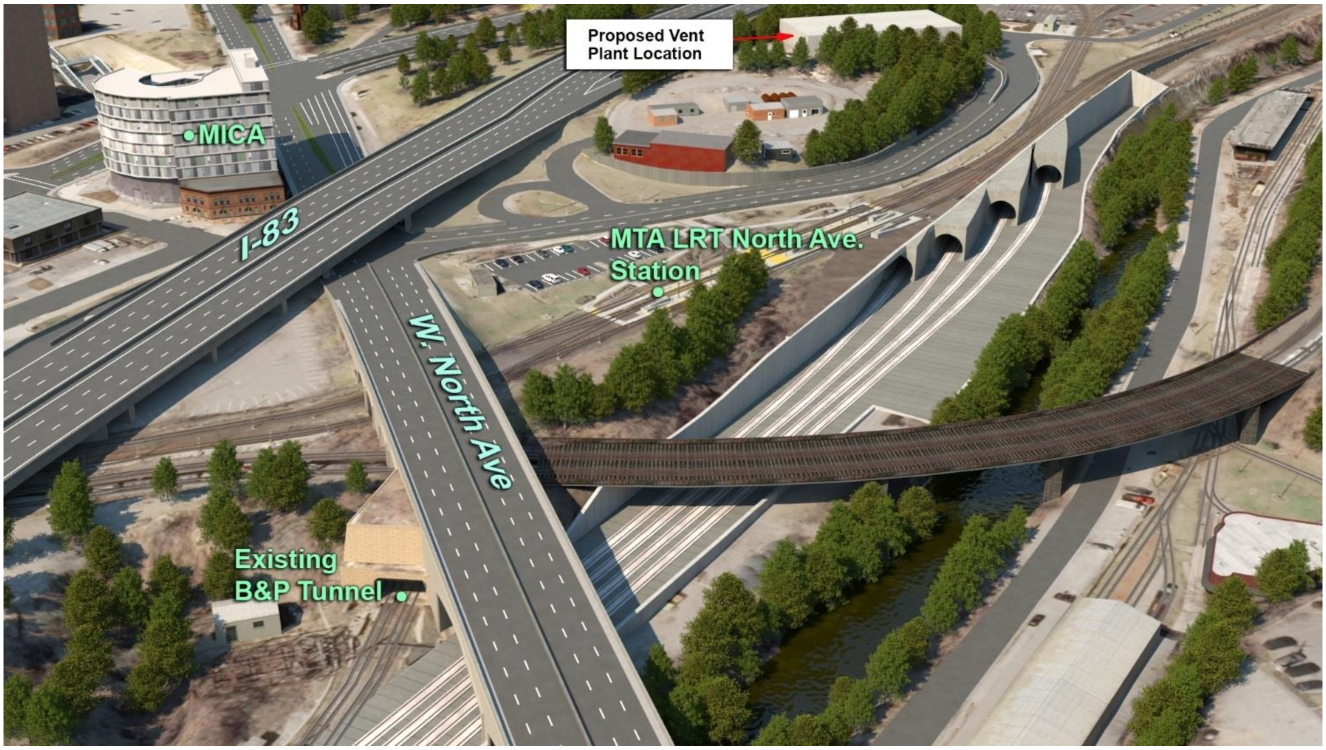
The depth of the tunnel at any point relative to the existing ground elevation can be viewed in the profile drawings in **Appendix J**. The depth of the tunnel is not at a constant number of feet below the ground because the existing surface elevation varies. The maximum depth of the tunnel is approximately 150 feet from top of the tunnel to existing ground elevation. For a majority of the tunnel length the distance between the top of the tunnel and existing ground elevation is in the range of 100 to 150 feet. The Preferred Alternative tunnel alignment must also pass under the Baltimore Metro tunnel in the vicinity of Pennsylvania Avenue.

e. North Portal to Penn Station

The tunnel emerges at the north portal, located east of I-83, immediately east of the existing MTA Light Rail line, and north of West North Avenue. A rendering of the north portal area is shown on **Figure IV-10**.

After leaving the portal area, the Preferred Alternative would cross under a CSX bridge, under the West North Avenue bridge, and under the Howard Street bridge to merge with existing tracks adjacent to and immediately north of Penn Station.

Figure IV-10: Rendering of North Portal Area



D. Ventilation Facilities

The need for ventilation for the tunnel portion of the Preferred Alternative is described in **Chapter III Section A**. The Preferred Alternative requires two ventilation zones to meet the capacity and operational performance required for train operations. Since the ventilation network works as a system (pushing or pulling air depending on the needs of a particular situation), the two ventilation zones require three ventilation facilities. To meet operational requirements, one ventilation facility is located at each end of the tunnel and one ventilation facility must handle ventilation from the middle of the tunnel. This section describes these three ventilation facilities.

Each of the three ventilation facilities would be an essential Life/Safety component of the Preferred Alternative, including an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, silencers and dampers, ductwork to connect to the tunnels, and emergency access/egress for the tunnels. Exhaust will be directed vertically from the ventilation buildings to maximize dispersion and distance from any receptors so as to facilitate compliance with federal air quality standards and to minimize the visual impact of the ventilation buildings on the surrounding community. The site upon which the Ventilation Facility is placed will also include parking for employees, loading dock, and site landscaping. These facilities have not been designed, nor have decisions been made as to architectural finish or even the final layout of the sites. For informational purposes, and to provide a sense of size, scale, and aesthetics, representative graphics are included in this chapter. These site layouts and architectural finishes are all subject to change, based upon more detailed engineering and coordination with local communities. Input on design will also be incorporated from consultation with Section 106 Consulting Parties.

1. Intermediate Ventilation Facility

The location of the Intermediate Ventilation Facility at 900-940 West North Avenue is based on consideration of impacts, integration into local land use plans and development, costs to construct, engineering and operational aspects, and agency and public comment input. The identification of this site is described in **Chapter III Section F**.

The approximate dimensions for the Intermediate Ventilation Facility are shown in **Table IV-1,** and the site is shown on **Figure IV-11**.

Table IV-1: Intermediate Ventilation Facility Dimensions

Building Footprint Length	Building Footprint Width	Building Height (above grade)	Chimney Height (above grade)
220 ft.	110 ft.	45 ft.	60 ft.

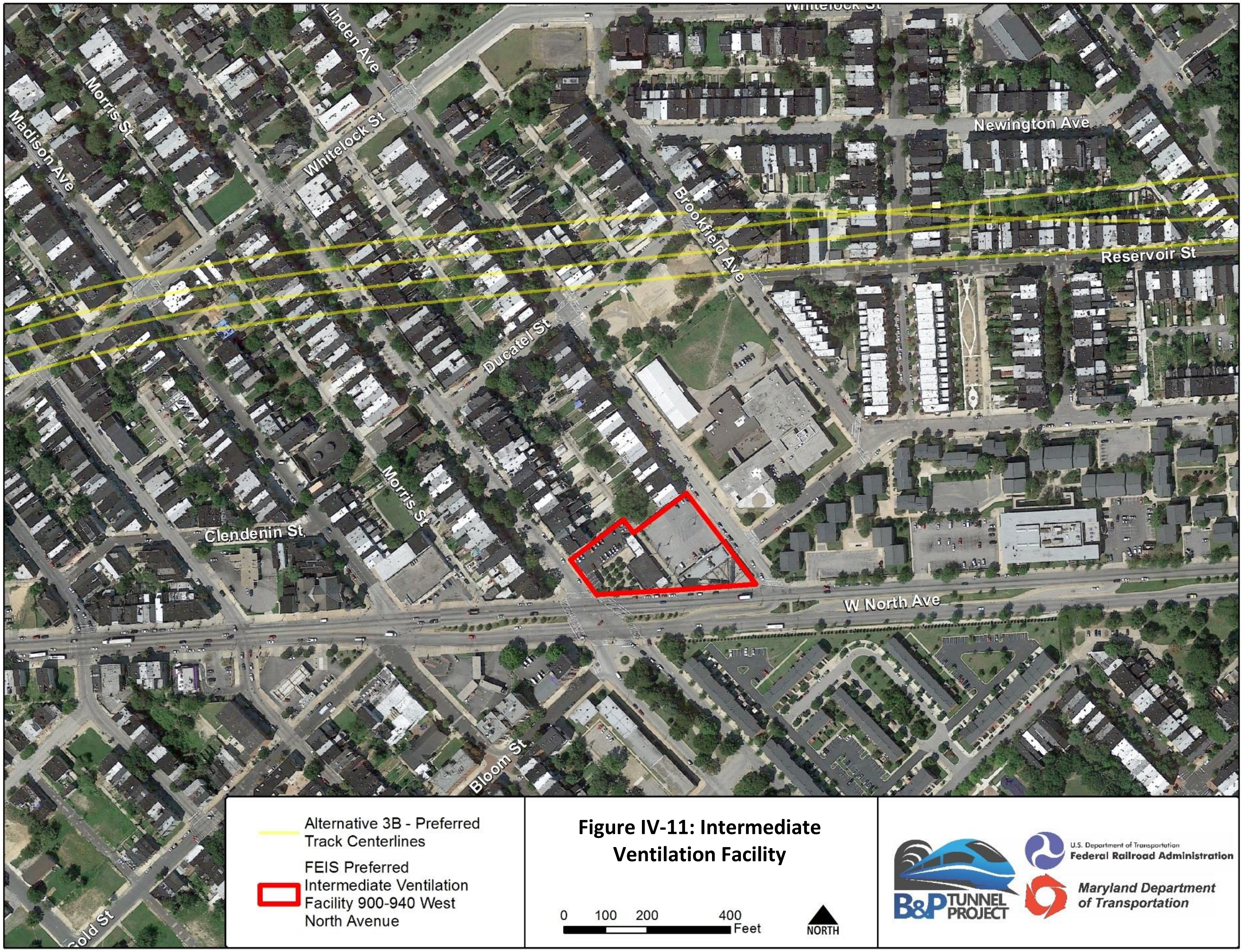


Figure IV-11: Intermediate Ventilation Facility

Whitelock St
Linden Ave
Morris St
Madison Ave
Whitelock St
Newington Ave
Brookfield Ave
Reservoir St
Ducatel St
Morris St
Clendenin St
W North Ave
Bloom St
Gold St
Alternative 3B - Preferred Track Centerlines
FEIS Preferred Intermediate Ventilation Facility 900-940 West North Avenue
0 100 200 400 Feet
NORTH
B&P TUNNEL PROJECT
U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation

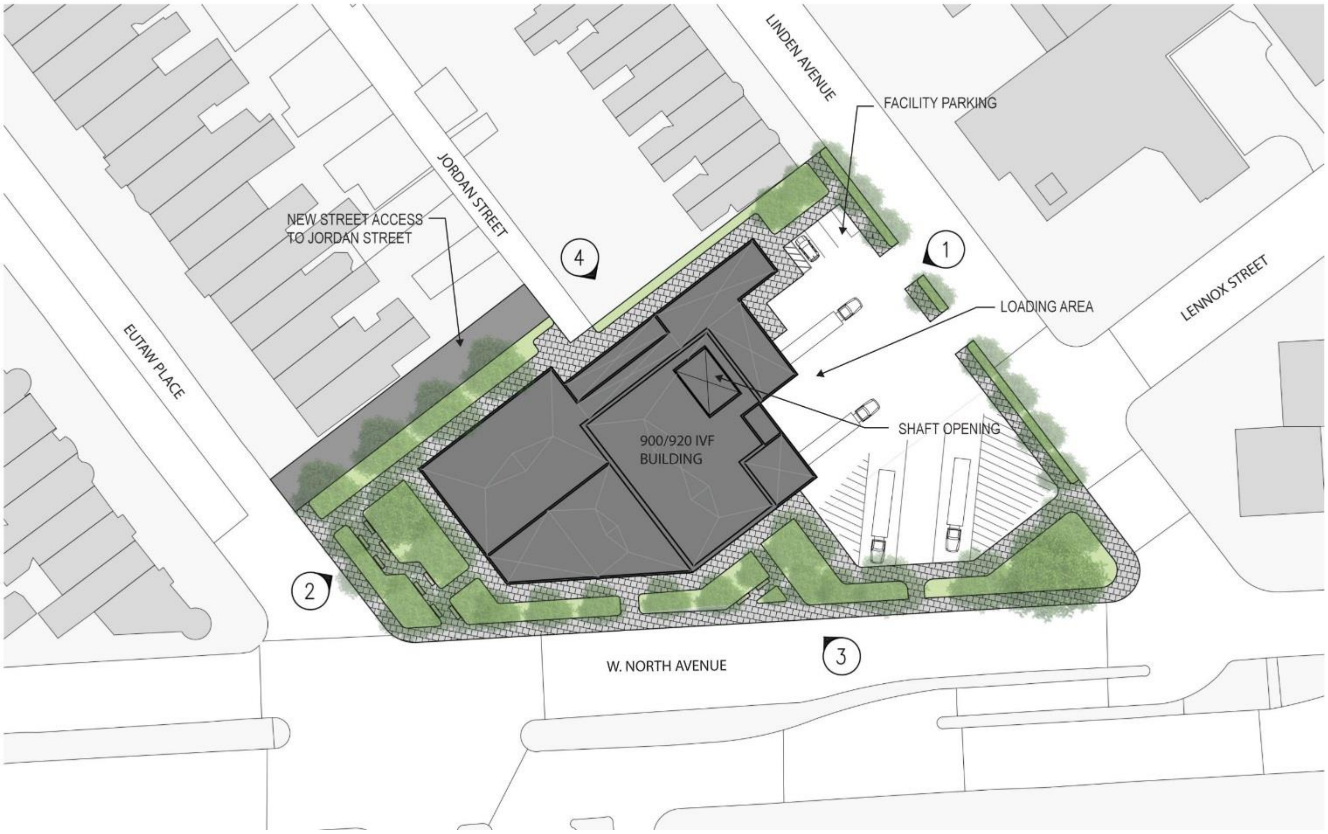
a. Intermediate Ventilation Facility: 900-940 West North Avenue

The 900-940 West North Avenue site is comprised of three real estate parcels:

- 900-918 West North Avenue, which includes the Sudsville Laundry and the Linden Bar & Liquor store;
- 920-940 West North Avenue, which includes the Always Learning Daycare Center, Metropolitan OB GYN Associates, Icetech Inc., LinkiT, LLC; and Total Health Care.
- 1000 Linden Avenue, which includes a parking lot.

A representative site layout for the 900-940 West North Avenue site is shown on **Figure IV-12**.

Figure IV-12: Representative Site Layout for Intermediate Ventilation Site at 900-940 West North Avenue



Representative views of the Intermediate Ventilation Facility at 900-940 West North Avenue are shown in **Figures IV-13, 14, 15, and 16** from the east, west, south, and north directions. These figures correspond with the numbered arrows on **Figure IV-12**.

Figure IV-13: East Elevation at 900-940 West North Avenue Site ①
Representative View from Linden Avenue and John Eager Howard Elementary School

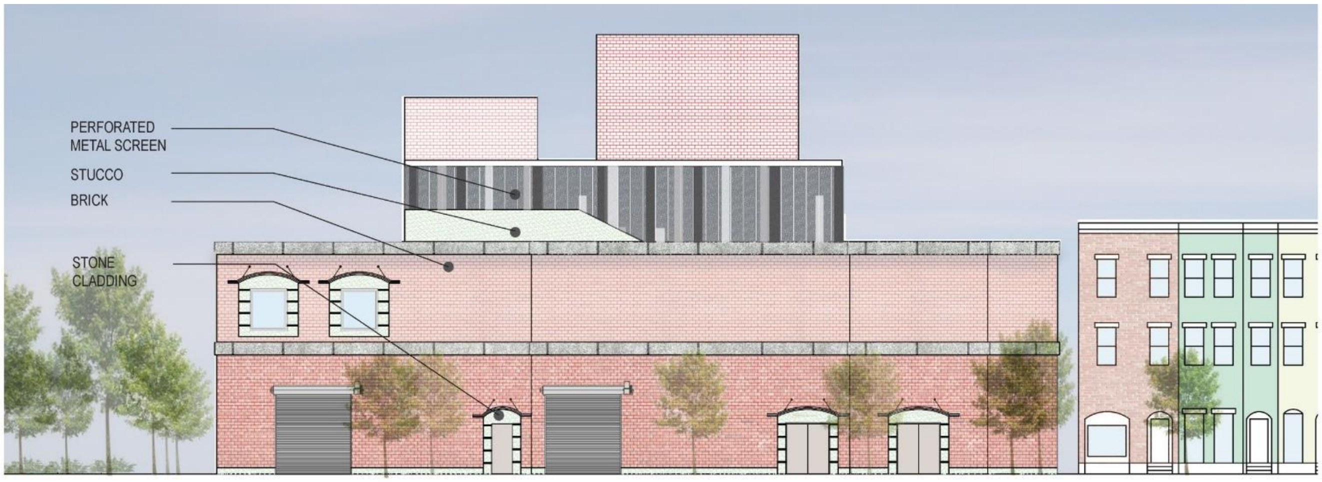


Figure IV-14: West Elevation at 900-940 West North Avenue Site ②
Representative View from Eutaw Place

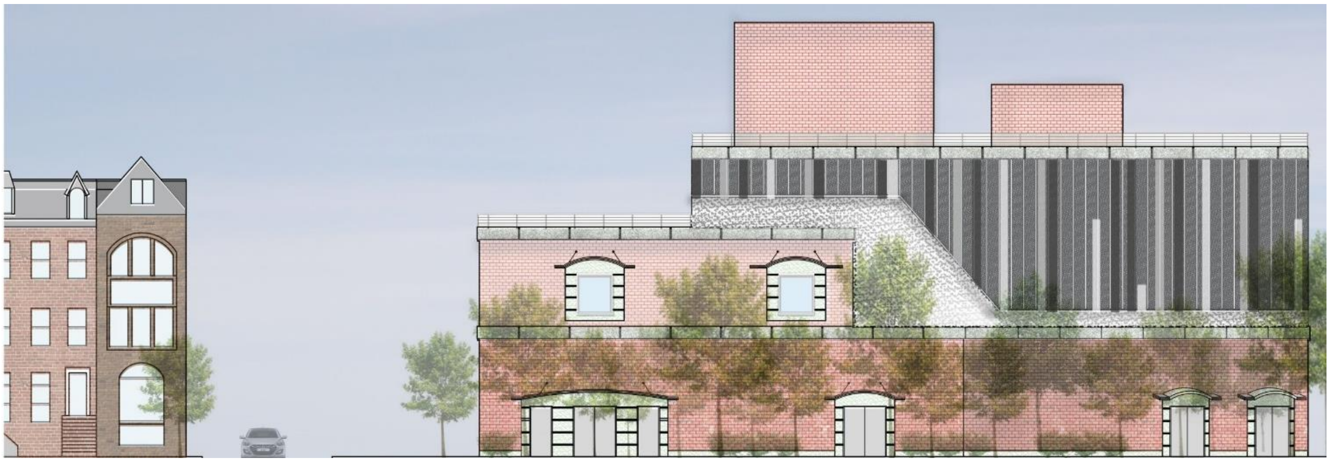


Figure IV-15: South Elevation at 900-940 West North Avenue Site ③
Representative View from West North Avenue

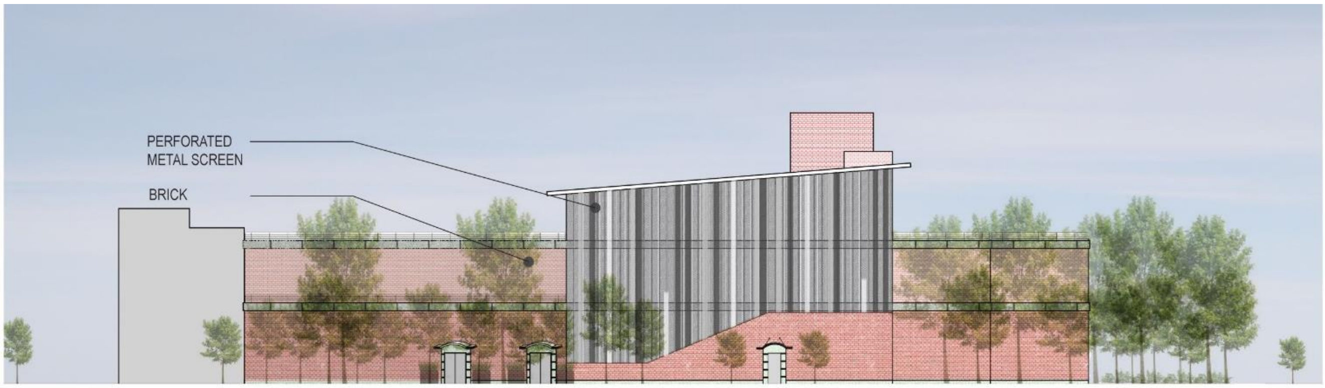
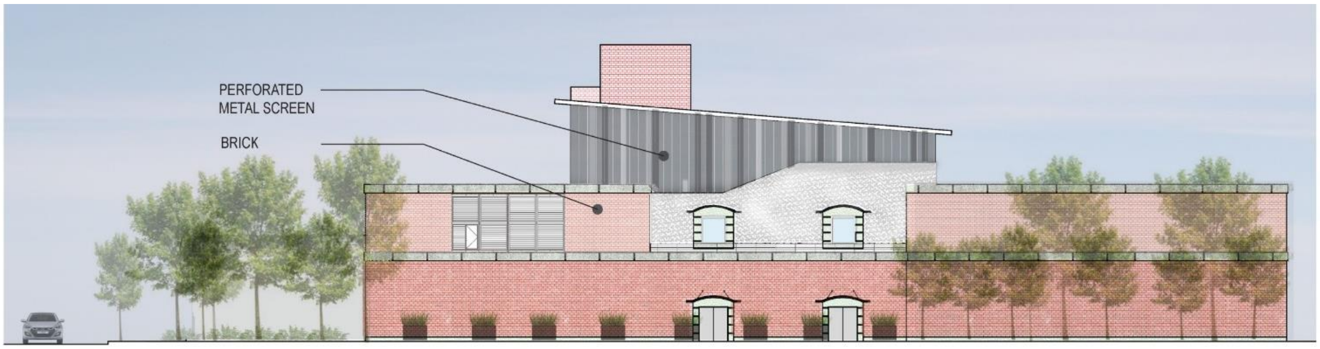


Figure IV-16: North Elevation at 900-940 West North Avenue Site ④
Representative View from Jordan Street



2. South Ventilation Facility

For the Preferred Alternative, the South Ventilation Facility is integrated into the south portal area. The approximate dimensions are shown in **Table IV-2. Figure IV-17** shows the proposed location and representative site plan. One section of the South Ventilation Facility is provided on **Figure IV-18**, and six representative views of the South Ventilation Facility are provided on **Figures IV-19** through **IV-24** from the east, north, south, and west corresponding with the numbered arrows on **Figure IV-17**.

Table IV-2: South Ventilation Facility Dimensions

Building Footprint Length	Building Footprint Width	Building Height (above grade)	Chimney Height (above grade)
220 ft.	190 ft.	40 ft.	55 ft.

Figure IV-17: Proposed Location and Representative Site Plan for the South Ventilation Facility

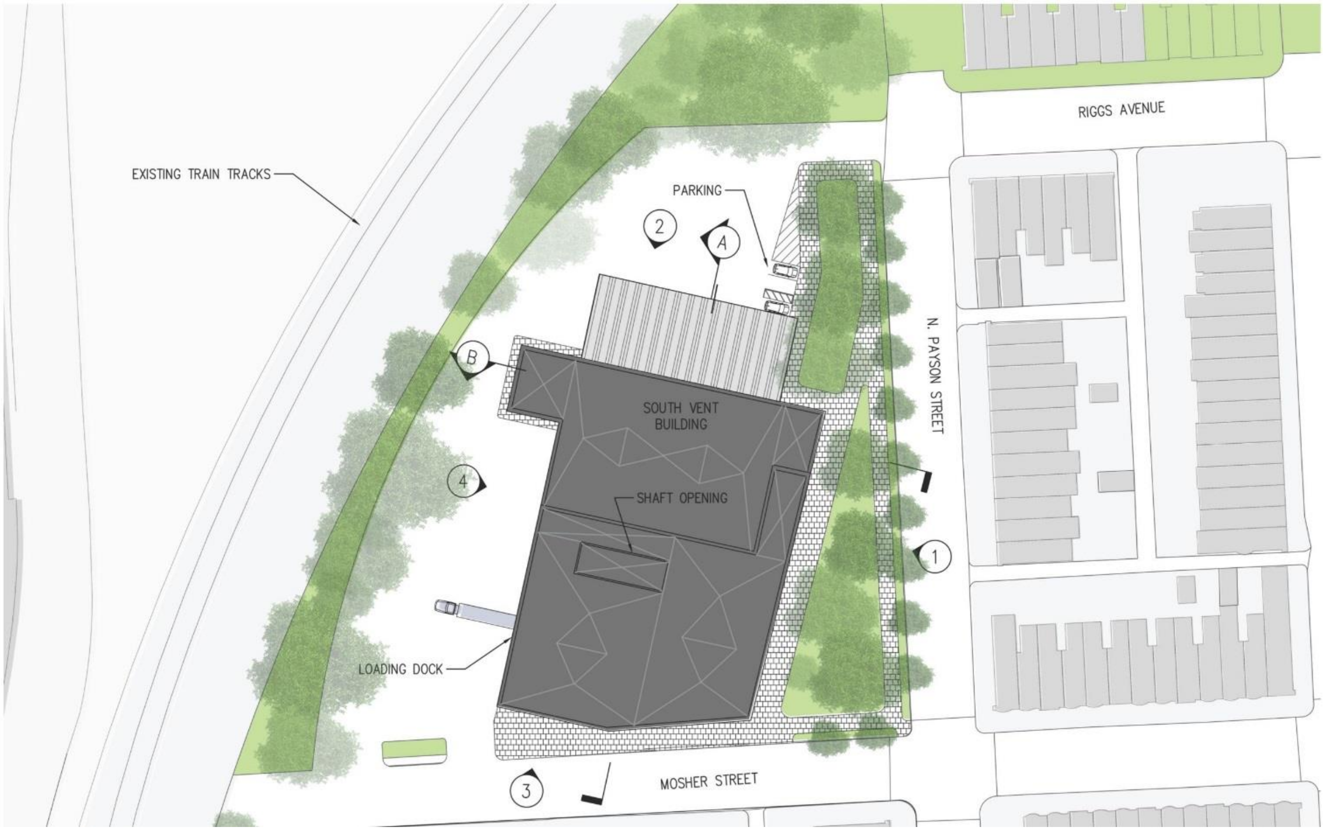


Figure IV-18: Section Ⓑ of South Ventilation Facility Representative View from Ventilation Facility Parking Lot

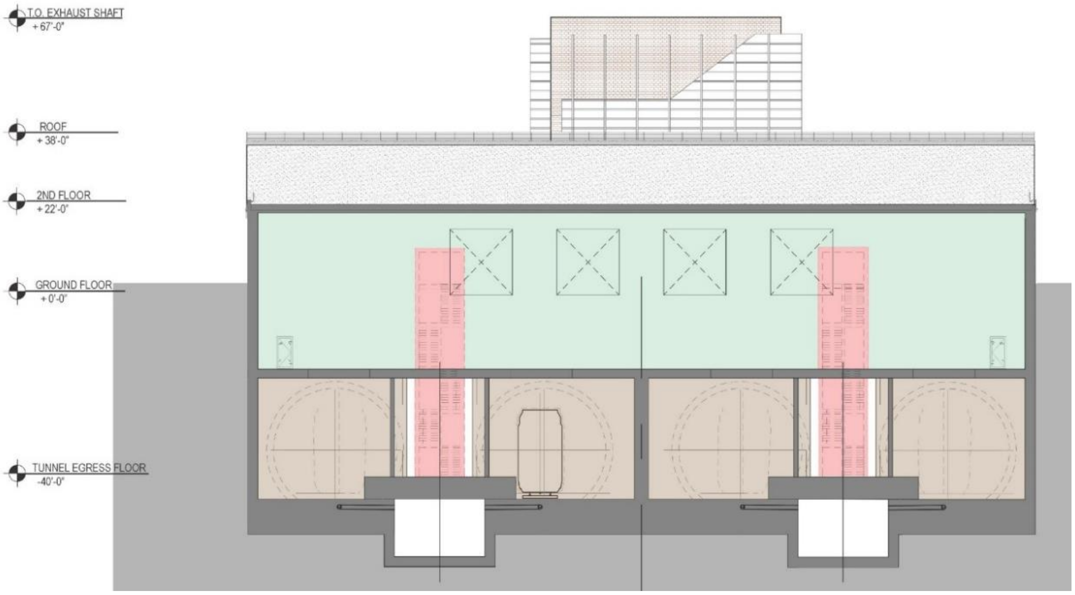


Figure IV-19: East Elevation of South Ventilation Facility ①
Representative View from Payson Street

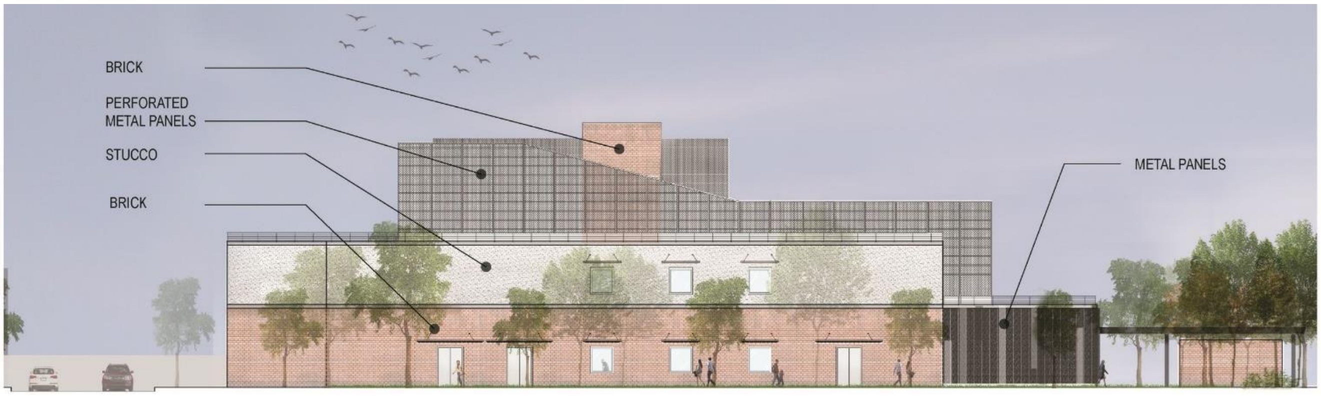


Figure IV-20: North Elevation of South Ventilation Facility ②
Representative View from Ventilation Facility Parking Lot

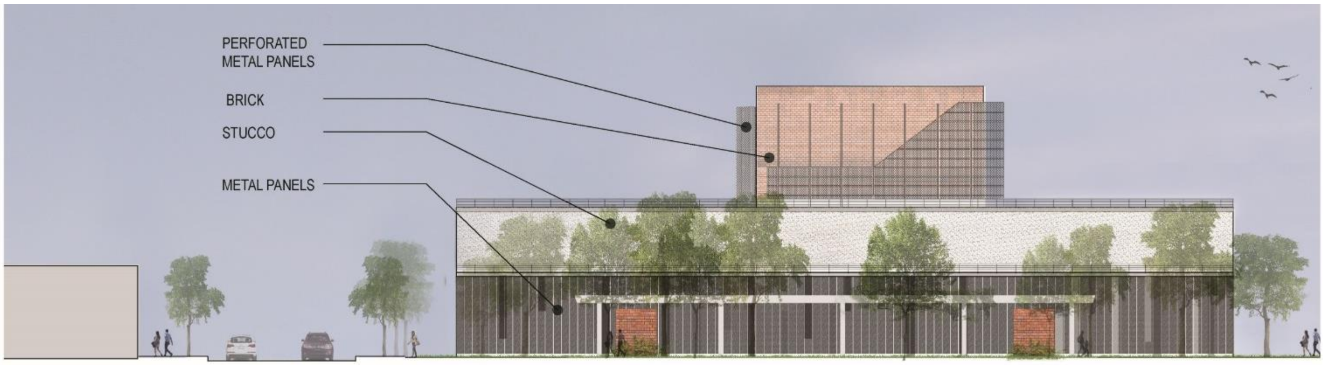


Figure IV-21: South Elevation of South Ventilation Facility ③
Representative View from Mosher Street

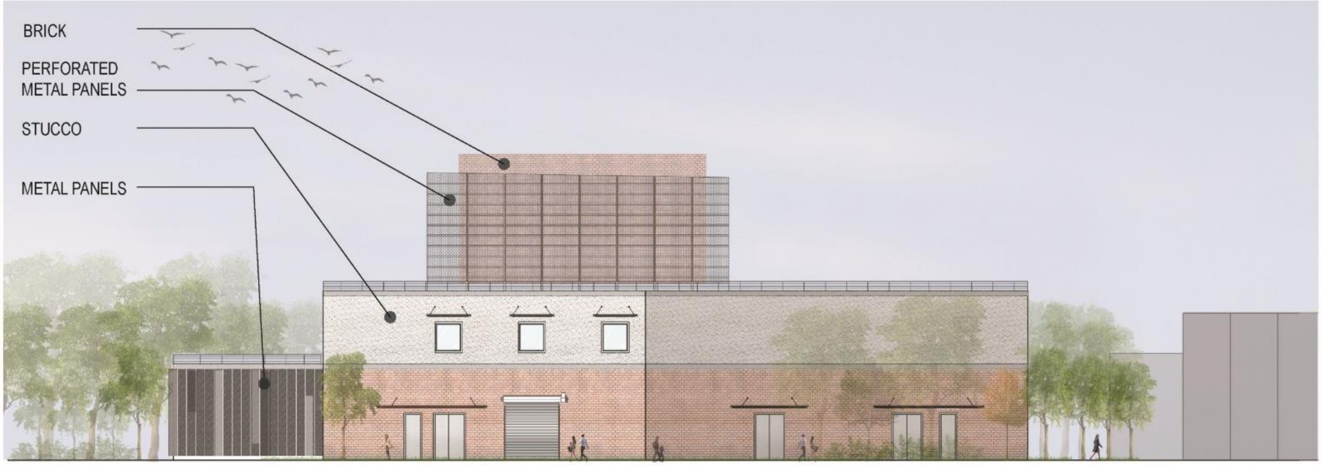
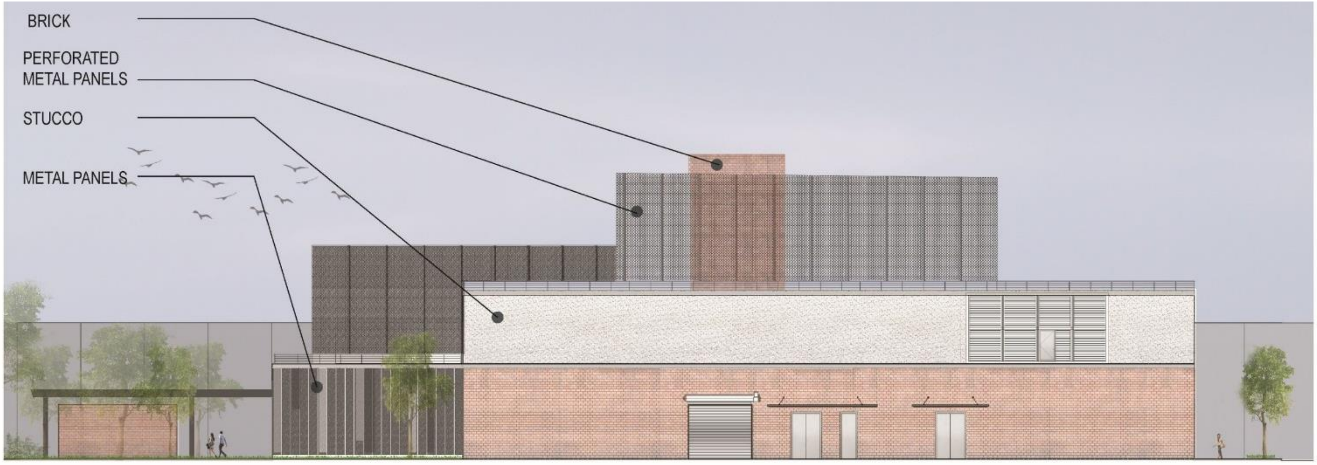


Figure IV-22: West Elevation of South Ventilation Facility ④
Representative View from Existing NEC



3. North Ventilation Facility

For the Preferred Alternative, the North Ventilation Facility is located west of the north tunnel portal in an area that is part of the West North Avenue Interchange with I-83. The parcel is bounded by I-83 and the northbound off-ramp from I-83 to West North Avenue. Currently, the site is partly occupied by Baltimore City maintenance facilities. The North Ventilation Facility would occupy undeveloped land within the parcel. The approximate dimensions are shown in **Table IV-3,** and **Figure IV-23** shows the proposed location and representative site plan. **Figures IV-24** through **IV-27** show four representative views of the North Ventilation Facility from the south, north, east, and west corresponding with the numbered arrows on **Figure IV-23**.

Table IV-3: North Ventilation Facility Dimensions

Building Footprint Length	Building Footprint Width	Building Height (above grade)	Chimney Height (above grade)
175 ft.	145 ft.	45 ft.	50 ft.

Figure IV-23: Proposed Location and Representative Site Plan for the North Ventilation Facility

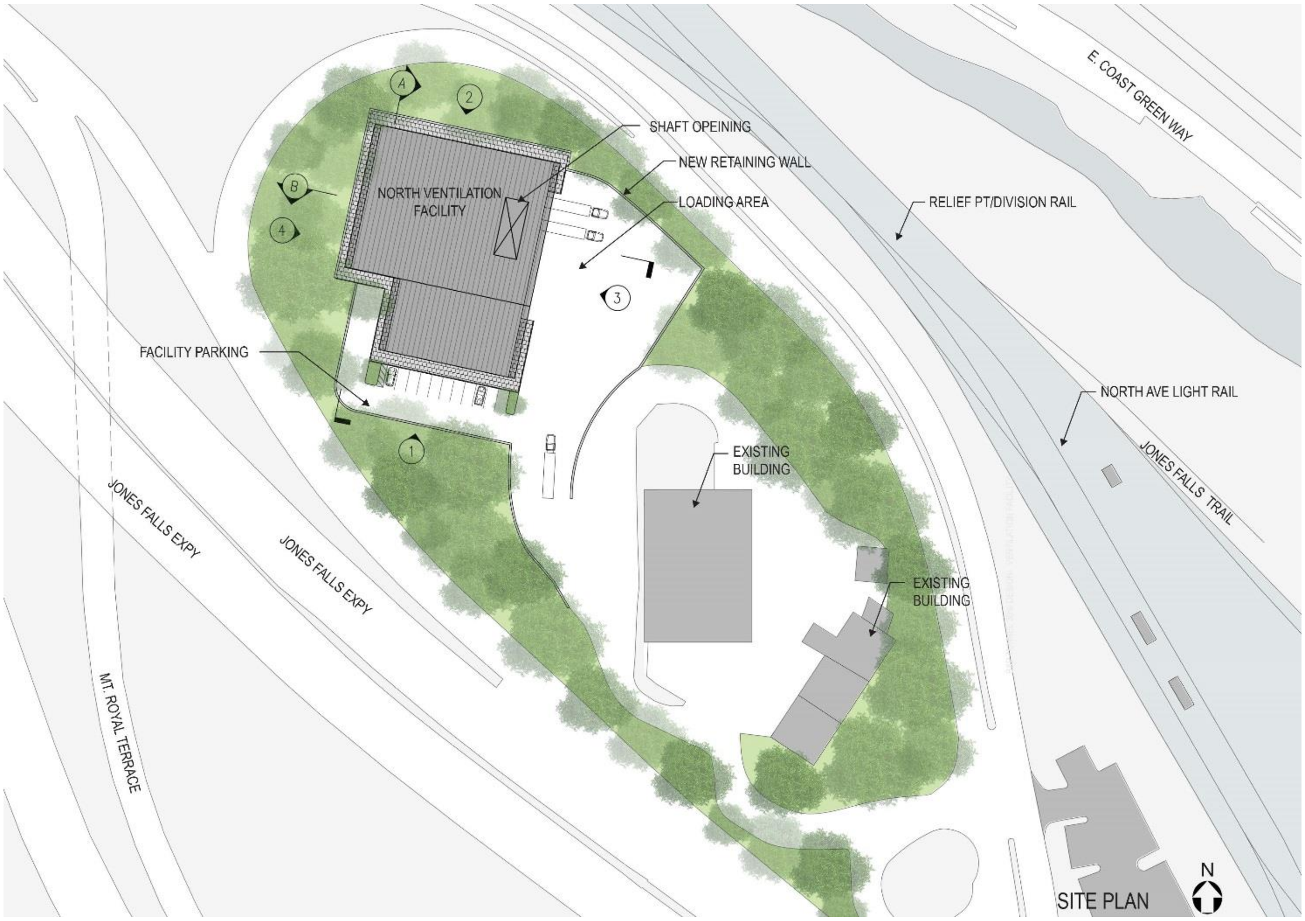


Figure IV-24: South Elevation of the North Ventilation Facility ① Representative View from Jones Falls Expressway

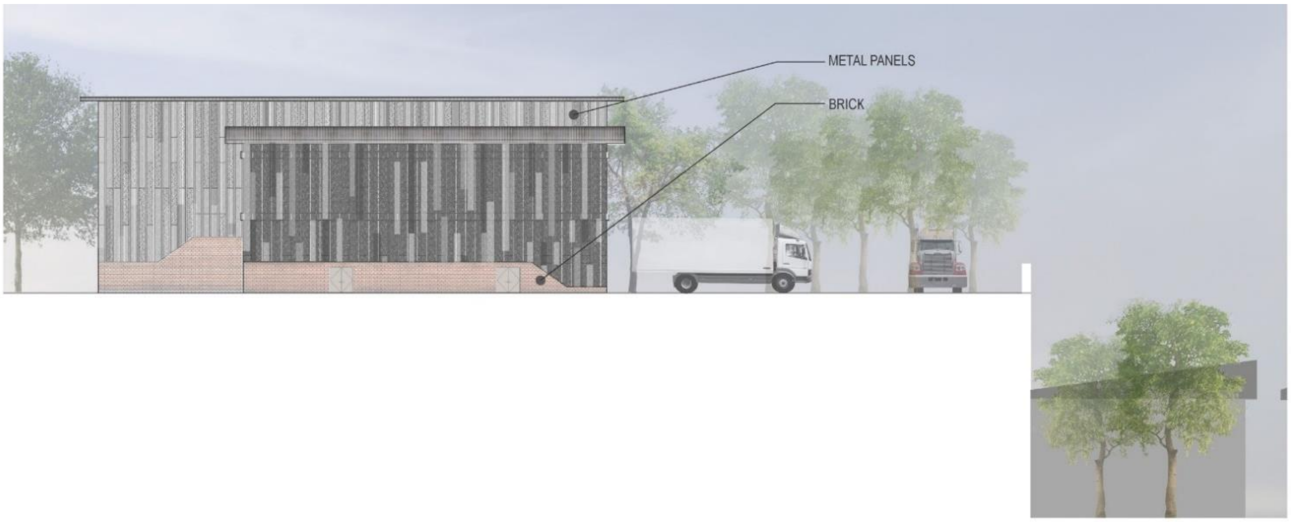


Figure IV-25: North Elevation of the North Ventilation Facility ②
Representative View from I-83 Ramp

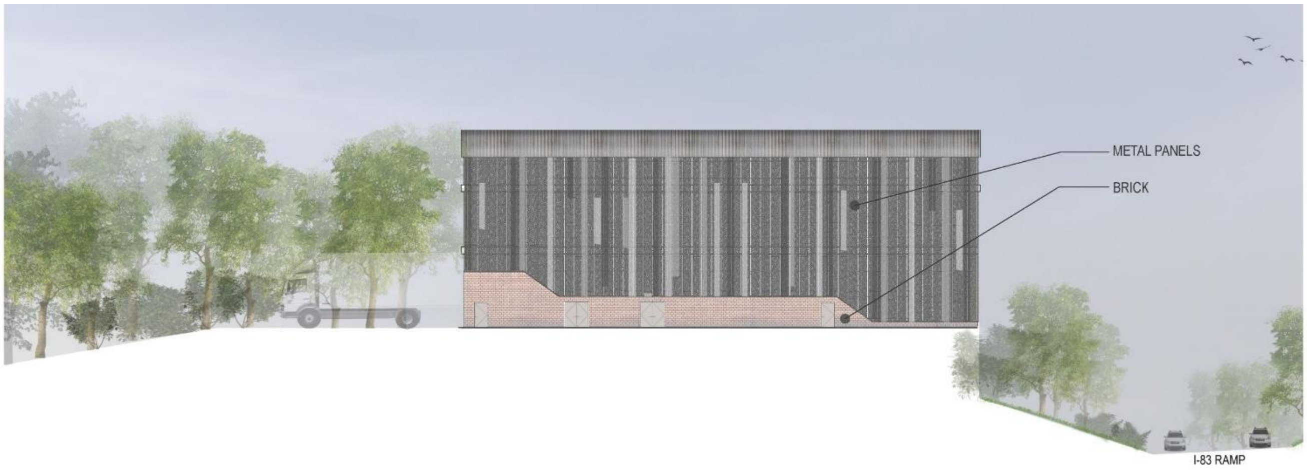


Figure IV-26: East Elevation of the North Ventilation Facility ③
Representative View from Light Rail

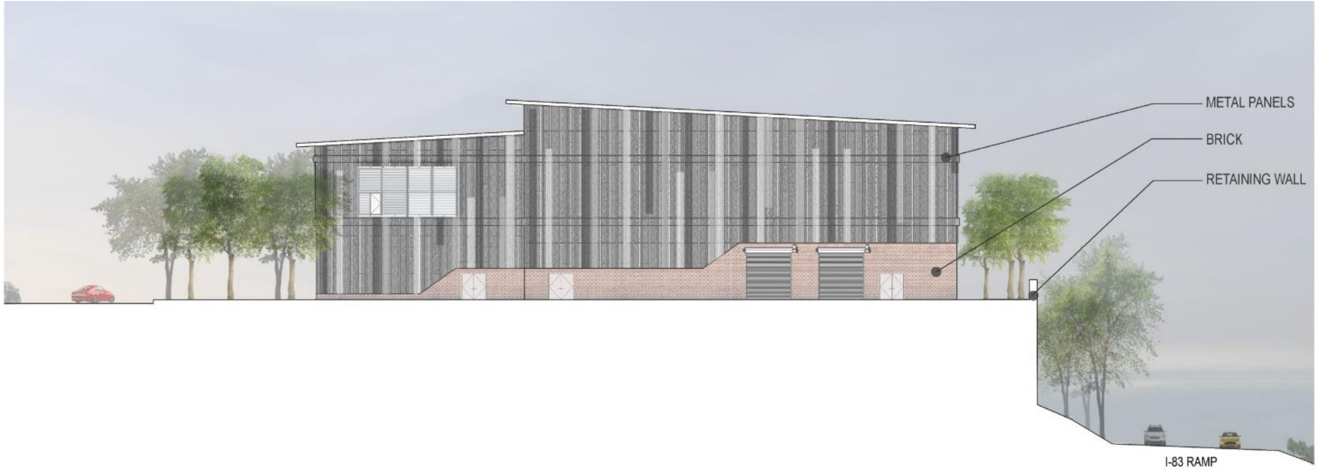
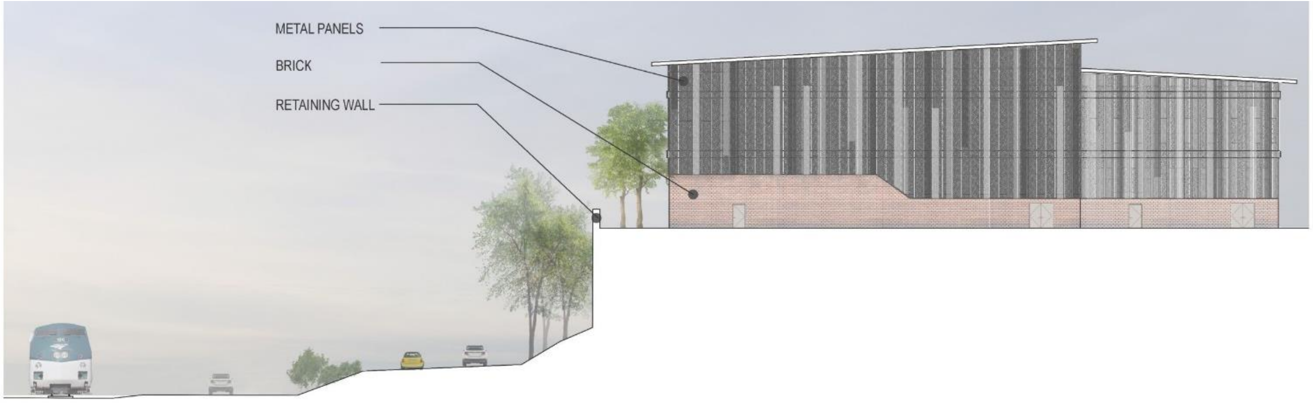


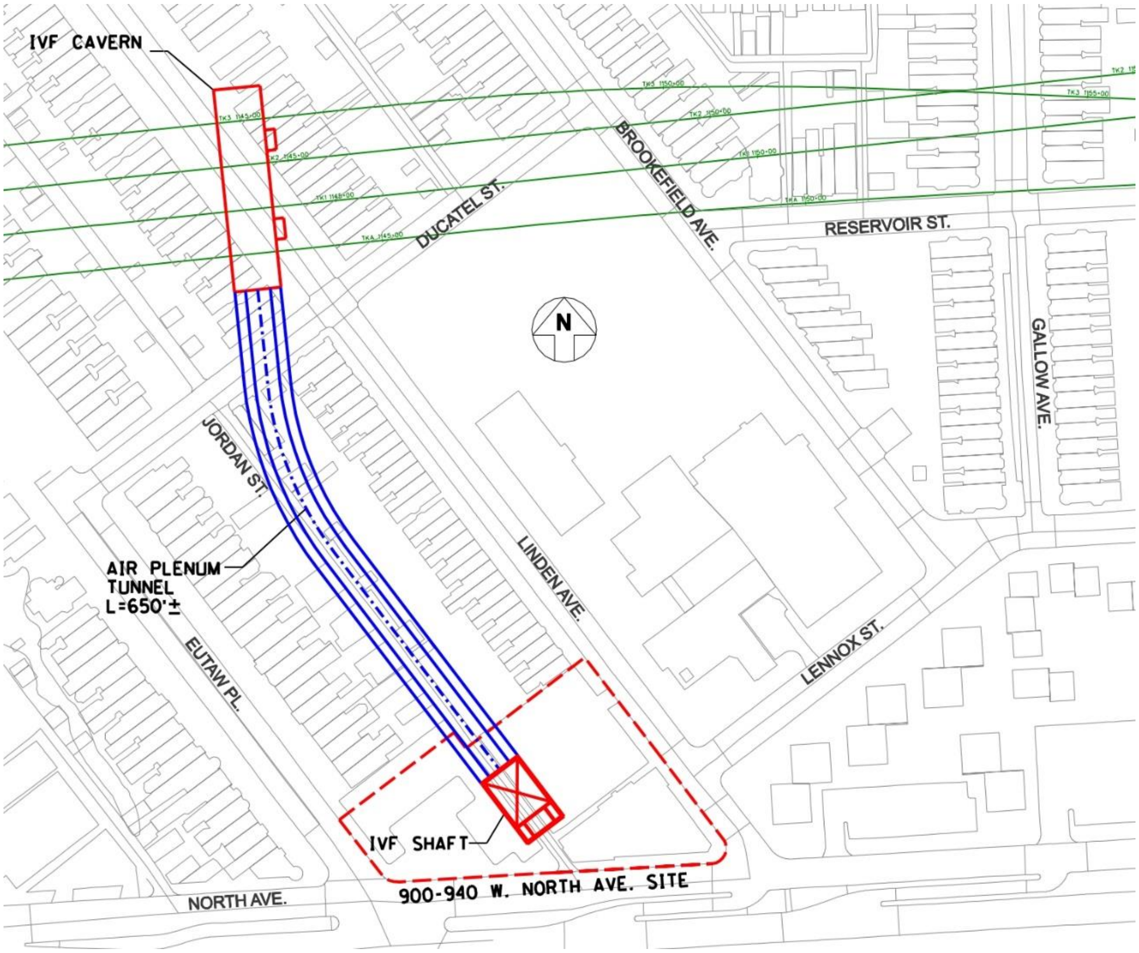
Figure IV-27: West Elevation of the North Ventilation Facility ④
Representative View from Jones Falls Expressway



4. Intermediate Ventilation Facility Plenum

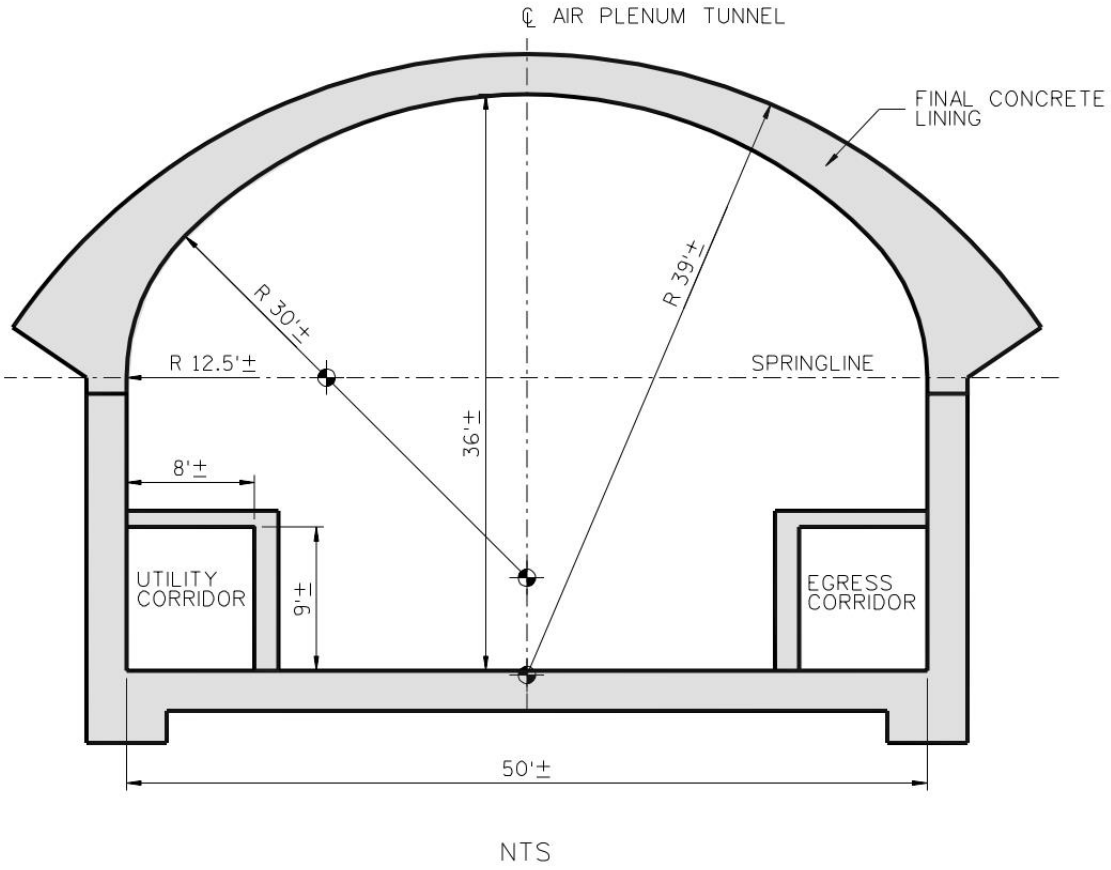
Since the Intermediate Ventilation Facility would be offset from the four tunnels, that is, not directly above or immediately adjacent to the tunnels, the Intermediate Ventilation Facility must be connected to the tunnels through an underground air passage referred to as a plenum. The plenum for the Intermediate Ventilation Facility location at 900-940 West North Avenue is shown in **Figure IV-28.**

Figure IV-28: Ventilation Plenum (900-940 West North Avenue)



The plenum will require a cross-sectional area of 1,400 square feet to accommodate the airflow required **(Figure IV-29).** The shape of the plenum will likely be horseshoe shaped with a flat bottom. An egress/access corridor about 9 feet high by 8 feet wide and a utility corridor, also 9 feet high by 8 feet wide, will be incorporated into the ventilation plenum tunnel. The egress/access corridor will accommodate emergency egress for rail patrons and access for emergency respondents.

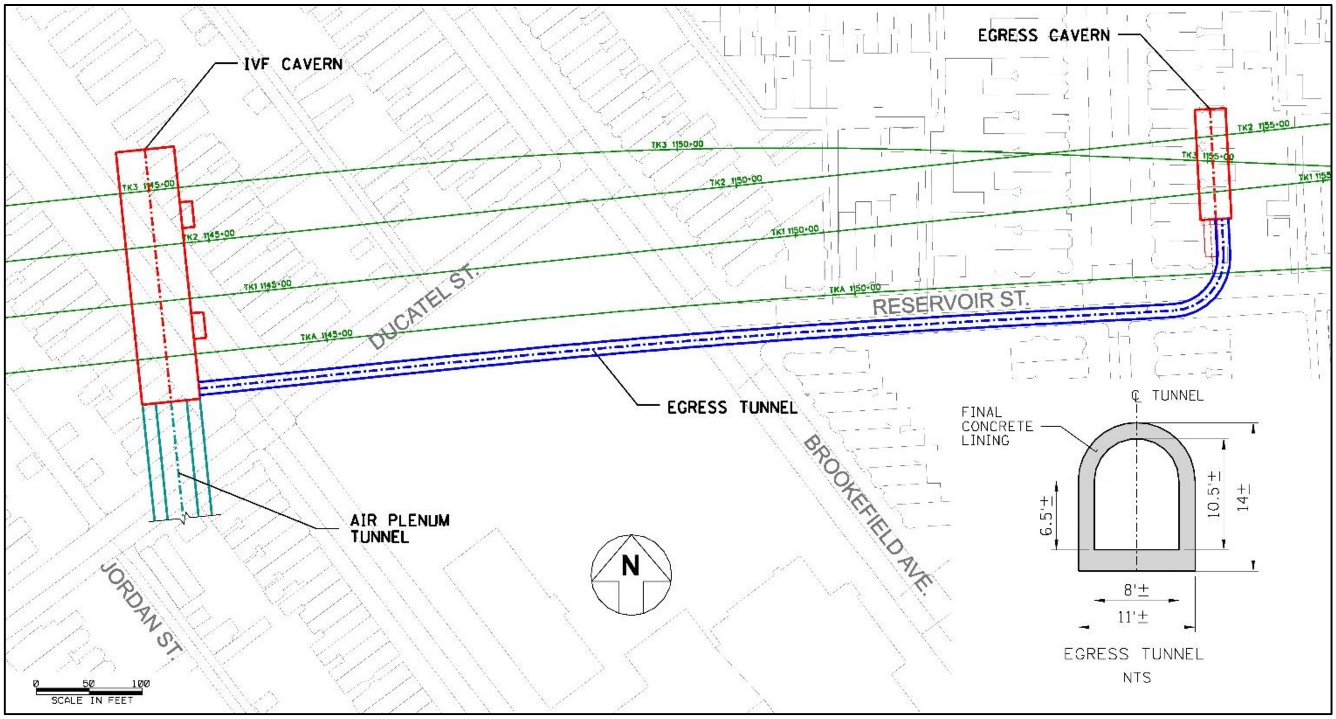
Figure IV-29: Cross-section of Plenum to Intermediate Ventilation Facility



E. Emergency Egress

The Preferred Alternative must be designed and constructed in compliance with all current standards relative to Fire, Life and Safety, which includes compliance with the National Fire Protection Association (NFPA) 130. Emergency access/egress for pedestrians must be accomplished via emergency exits no farther than 2,500 feet apart or cross passages between tunnels every 800 feet or less, or in some situations, a combination of both. For the Preferred Alternative, three locations would be provided for emergency egress to the surface, working with cross passages in the tunnels. The emergency egress to ground level would be provided at the South Ventilation Facility, at the Intermediate Ventilation Facility, and at the North Ventilation Facility. Additionally, an egress tunnel located parallel to the main tunnel bores would provide an egress passage from an egress cavern located between the Intermediate Ventilation Facility and the north portal. This egress tunnel would connect to the egress corridor incorporated into the Intermediate Ventilation Facility air plenum tunnel, as shown in **Figure IV-30,** below.

Figure IV-30: Parallel Egress Tunnel



F. West Baltimore MARC Station

The existing West Baltimore MARC Station is located on the existing NEC south of the existing B&P tunnel. The station is located on an embankment between the two NEC bridges which cross over Franklin and Mulberry Streets. The NEC track at this location is on a curve designated by Amtrak as Curve 381. Due to the curvature of Curve 381, the West Baltimore MARC Station platforms are low level, which means the platform is lower than the floor of the rail car. If the existing platforms were raised to the high-level position, there would be unsafe gaps between the platform and the floor of rail cars, creating an unacceptable safety hazard and lack of compliance with current design standards. The existing low-level platforms do not meet ADA design standards, but the station continues to operate because it was constructed prior to the establishment of the ADA standards. The low-level platforms also have an impact on the amount of time needed to board and alight passengers with the MARC trains, increasing this time substantially compared to high-level platforms. This boarding and alighting time also affects overall MARC train service reliability. The West Baltimore MARC Station experiences high demand, as indicated by recent initiatives to expand the surface parking provided at the station. It is highly desirable to improve the station to incorporate high-level platforms and achieve full ADA accessibility.

The Preferred Alternative creates a new track alignment in the West Baltimore MARC Station area. This new track alignment straightens the curve in the station area and shifts the alignment approximately 100 feet to the west. This results in the opportunity to construct a new West Baltimore MARC Station that can accommodate high-level platforms, thereby meeting ADA standards and allowing for faster, more efficient boarding and alighting with MARC trains. The new station can also continue to be strategically located near the existing station parking and MTA bus service that runs along Franklin and Mulberry Streets.

In addition to the high-level platforms, the Preferred Alternative would construct other features at the West Baltimore MARC Station to achieve ADA compliance, such as wheelchair-accessible vertical pedestrian connections to and from the elevated new station and street level. In general, the new West Baltimore MARC Station would be constructed to replace the components of the existing station. As part of the overall B&P Tunnel mitigation efforts, some enhancements to the station would be implemented as well, such as platform canopies, public art, and security lighting.

G. Roadway

The construction of the Preferred Alternative requires the reconstruction of several roadways or portions of roadways in the Project area, as well as the reconstruction of several bridges, including:

- Warwick Avenue between Franklin Street and Lexington Street
- Franklin Street between Warwick Avenue and Smallwood Street
- Mulberry Street between Warwick Avenue and Smallwood Street
- Wheeler Avenue between Franklin Street and Edmondson Ave
- Lauretta Avenue at the intersection with Wheeler Avenue
- Bentalou Street south of Lauretta Avenue
- Edmondson Avenue bridge over NEC
- Lanvale Street between Payson Street and NEC
- Pulaski Street north of Rayner Avenue
- Lafayette Avenue Bridge over NEC
- Mosher Street between Payson Street and NEC
- NEC Bridge over Franklintown Road

H. Utilities

The construction of the Preferred Alternative requires the relocation of many utilities in the Project area. The more significant utilities include:

- Payson Street Inverted Siphon
- BGE 115 kV cable in Jones Falls Tunnel (84” diameter liner plate tunnel)

I. Construction

This section describes major construction elements for the Preferred Alternative. Descriptions of tunnel construction, ancillary structure construction, and open cut and cut-and-cover construction are provided. In addition, major construction staging areas are identified and associated truck routes for those staging areas are described.

1. Tunnel Construction Methods

The following construction methods will be employed on the Project:

- Construction by Tunnel Boring Machine (TBM)
- Construction by Mined Excavation Methods
- Construction by Open Cut and Cut-and-Cover Excavation Methods

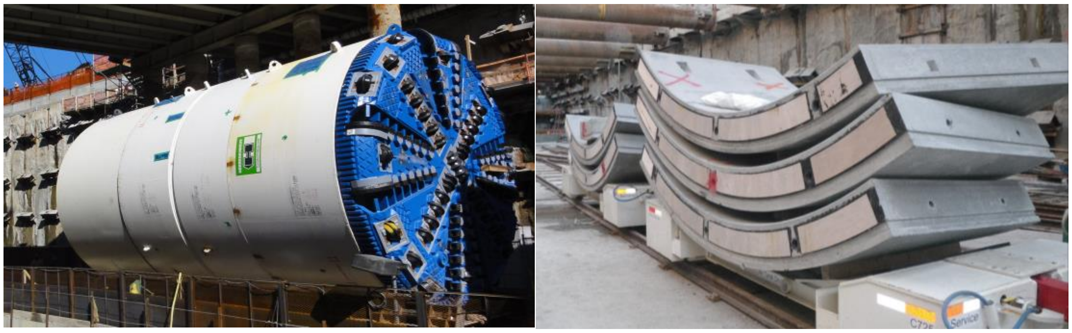
The Project will be constructed in variable ground conditions, including:

- Soft ground (soil)
- Mixed Face (concurrent exposure of soil and rock in the tunnel face)
- Rock

a. Construction by Tunnel Boring Machine

The rail or running tunnels will be constructed by TBM and lined with a precast concrete segmental lining installed at the rear of the TBM, concurrent with excavation. **Figure IV-31** depicts a TBM and precast concrete segments.

Figure IV-31: Tunnel Boring Machine and Precast Concrete Segments



The TBM excavates a full-circle cross-section using excavation tools contained in the TBM cutter head. The precast concrete segmental linings will be installed within the TBM tailskin concurrent with excavation.

b. Construction by Mined Excavation Methods

Underground ancillary structures required for tunnel operation will be constructed by mined excavation methods, generally using the Sequential Excavation Method (SEM). Initial structural support of different types, suitable for the range of anticipated ground conditions, will be installed concurrent with the excavation. The final lining of these structures will be cast-in-place concrete.

The SEM involves dividing the tunnel face into a series of horizontal and vertical excavation segments. Rock excavations will use modern controlled blasting methods, which reduce noise and vibration. The excavation cycle for rock excavation will include the drilling of blast holes, loading and detonating explosives, ventilating, inspecting blast results, removing excavated rock, and installing initial ground support.

Ancillary structures to be constructed by mined excavation methods include:

- Cross passages necessary for conformance to National Fire Protection Association (NFPA) 130 requirements for passenger evacuation in event of an emergency.
- Tunnel sump/pump stations.
- An underground ventilation plenum for the Intermediate Ventilation Facility.
- Adits to vertical egress shafts necessary for conformance to NFPA requirements for passenger evacuation in event of an emergency.

c. Construction by Open Cut and Cut-and-Cover Methods

Excavation by open cut and cut-and–cover methods will be performed for the following types of structures that will be included in the Project: ventilation facilities, vertical egress shafts, and for trackwork near the tunnel. Open cut and cut-and-cover construction means that earth will be excavated from the surface, removed from the area, and the resulting excavated area will be structurally supported from adjacent soils and ground.

The excavation support systems typically used include: Soldier pile and lagging walls, Secant pile walls, and Concrete slurry wall (diaphragm wall).

2. Construction Staging Areas

Four major construction staging areas would be required to construct the Preferred Alternative. The locations are at the south portal area, the Intermediate Ventilation Facility site, the north portal ventilation facility, and the north portal area. See **Figures IV-32** through **IV-35** for the proposed location of the four construction staging areas near the portals and Intermediate Ventilation Facility.

Figure IV-32: Construction Staging Area Near South Portal

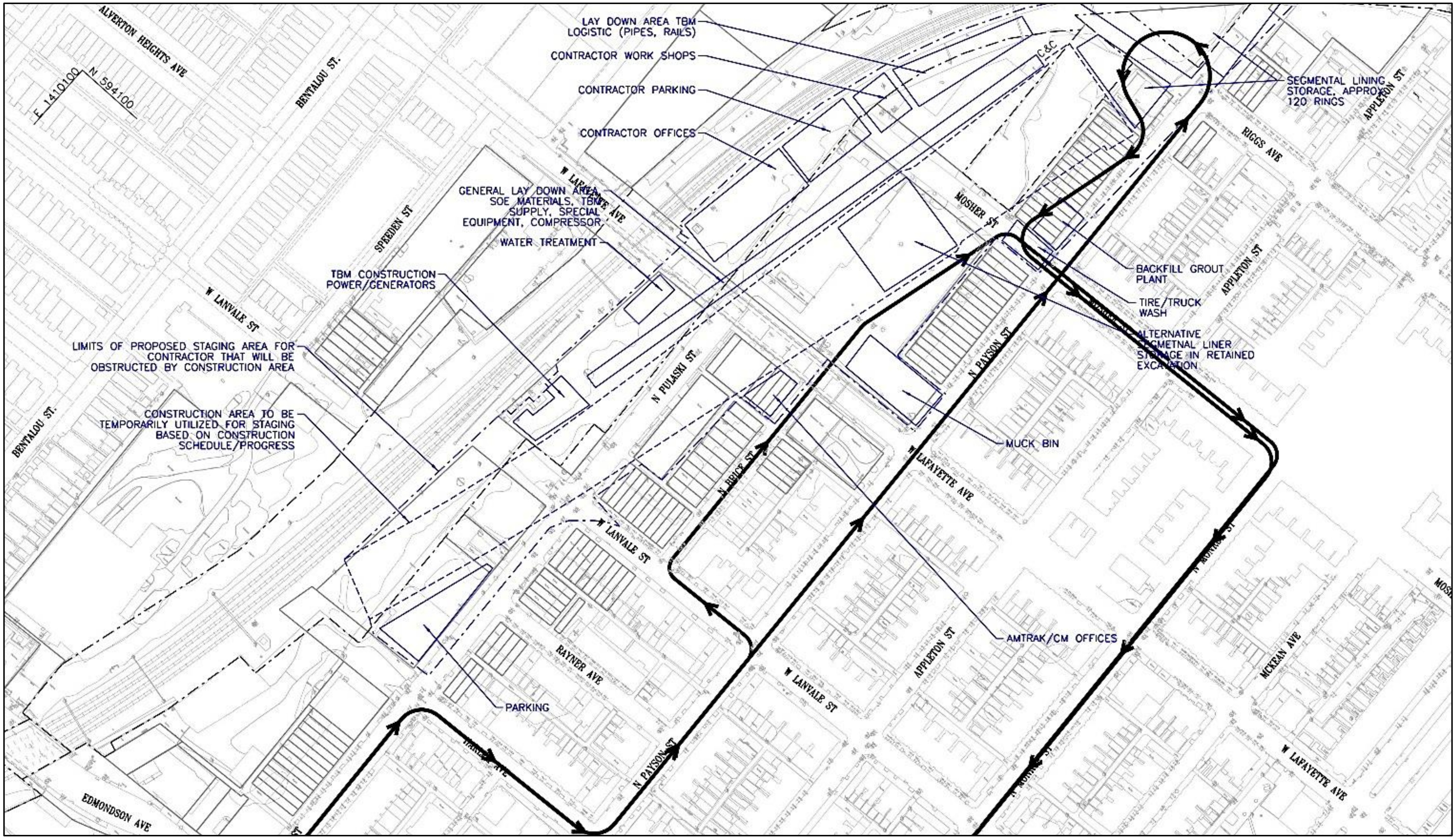

LAY DOWN AREA TBM LOGISTIC (PIPES, RAILS)
CONTRACTOR WORK SHOPS
CONTRACTOR PARKING
CONTRACTOR OFFICES
GENERAL LAY DOWN AREA SOE MATERIALS, TBM SUPPLY, SPECIAL EQUIPMENT, COMPRESSOR
WATER TREATMENT
TBM CONSTRUCTION POWER/GENERATORS
LIMITS OF PROPOSED STAGING AREA FOR CONTRACTOR THAT WILL BE OBSTRUCTED BY CONSTRUCTION AREA
CONSTRUCTION AREA TO BE TEMPORARILY UTILIZED FOR STAGING BASED ON CONSTRUCTION SCHEDULE/PROGRESS
SEGMENTAL LINING STORAGE, APPROX 120 RINGS
BACKFILL GROUT PLANT
TIRE/TRUCK WASH
ALTERNATIVE SEGMETNAL LINER STORAGE IN RETAINED EXCAVATION
MUCK BIN
AMTRAK/CM OFFICES
PARKING
C&C
E 1410100
N 594100
ALVERTON HEIGHTS AVE
BENTALOU ST.
SPEDEN ST
W LAFAYETTE AVE
W LANVALE ST
N PULASKI ST
MOSHER ST
RIGGS AVE
APPLETON ST
N PAYSON ST
W LAFAYETTE AVE
N BRICE ST
W LANVALE ST
RAYNER AVE
APPLETON ST
W LANVALE ST
N MONROE ST
MCKEAN AVE
W LAFAYETTE AVE
HARLEM AVE
N PAYSON ST
EDMONDSON AVE
BENTALOU ST.

Figure IV-33: Construction Staging Area at Intermediate Ventilation Facility

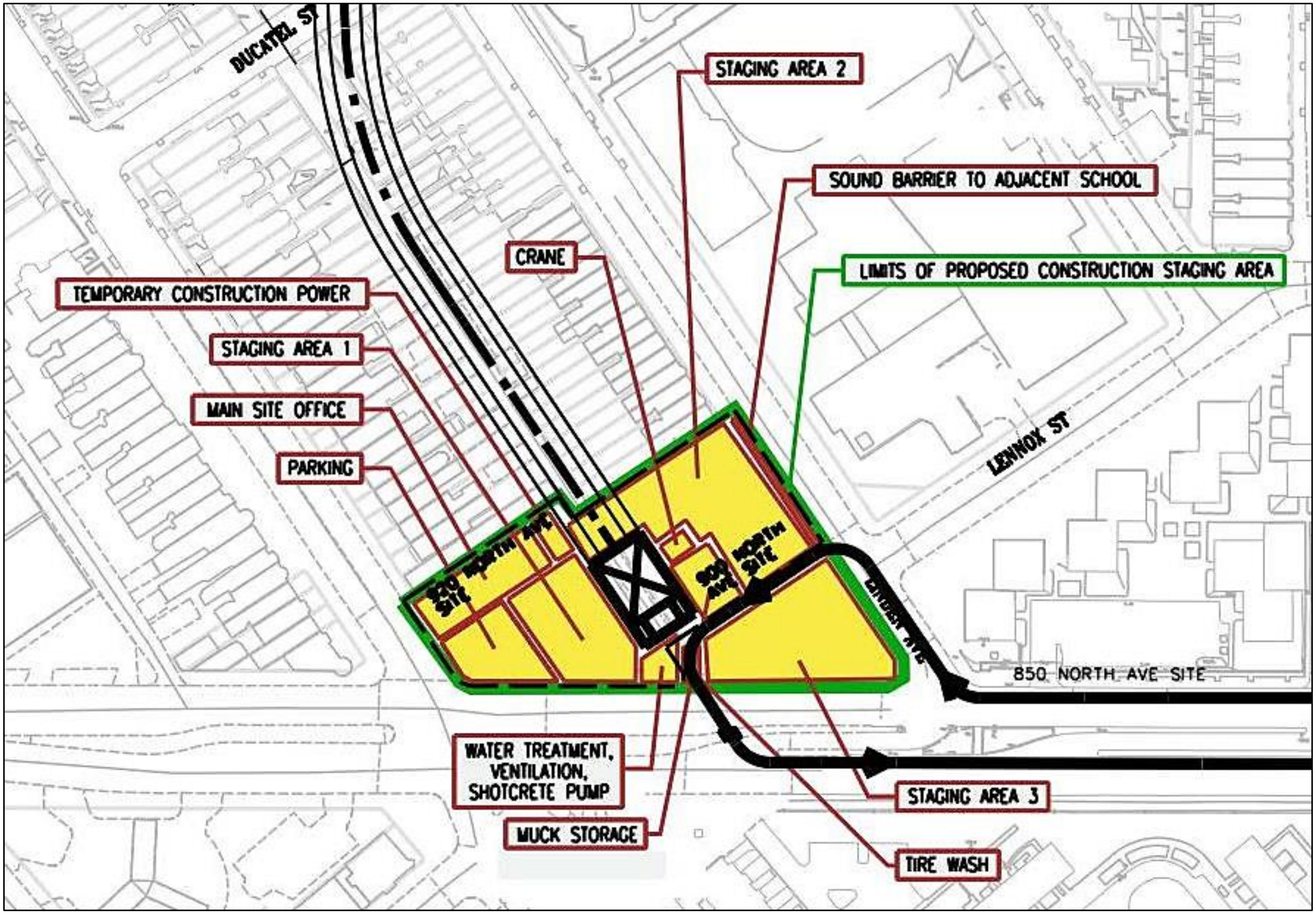


Figure IV-34: Construction Staging Area at North Ventilation Facility

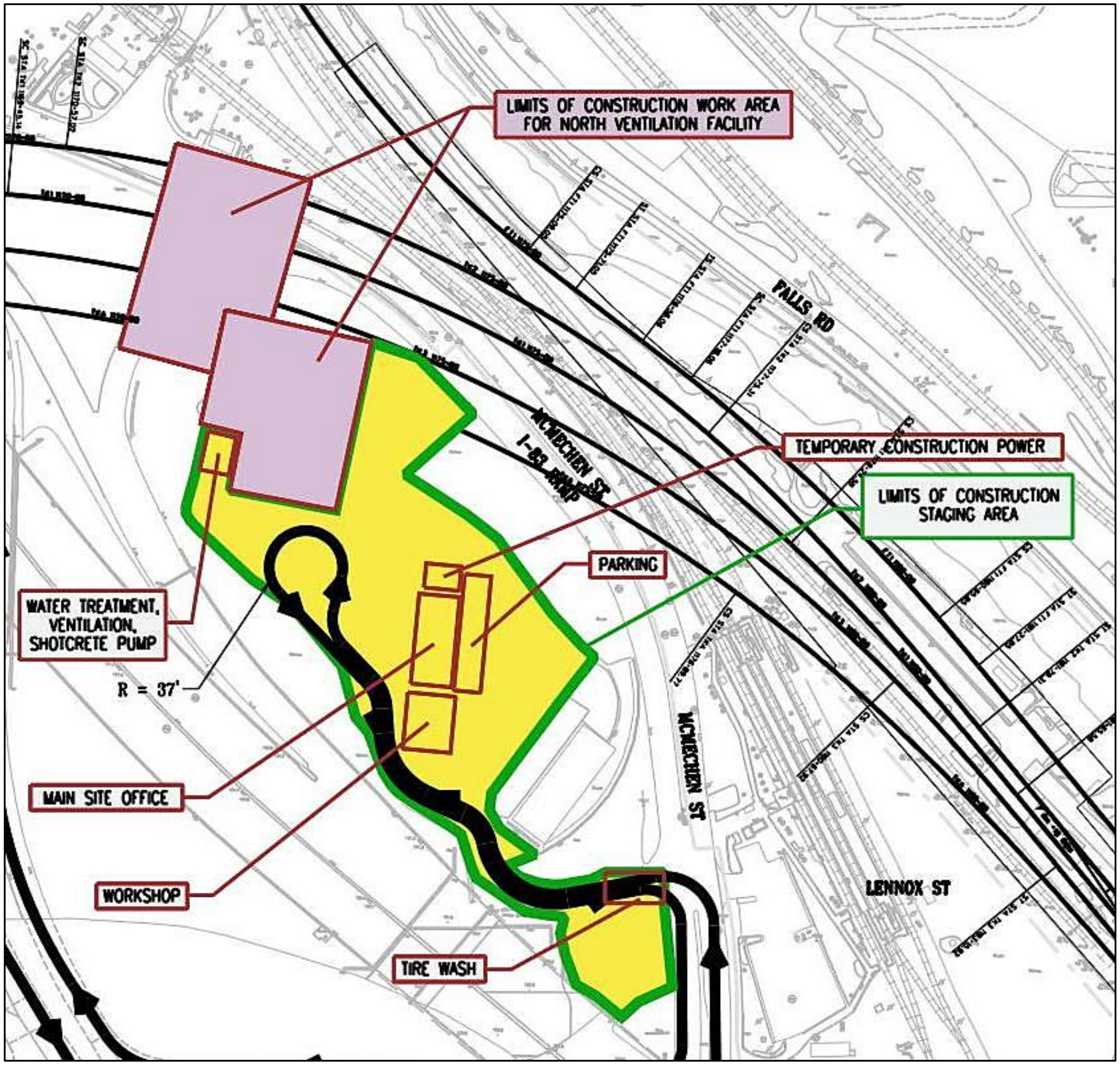
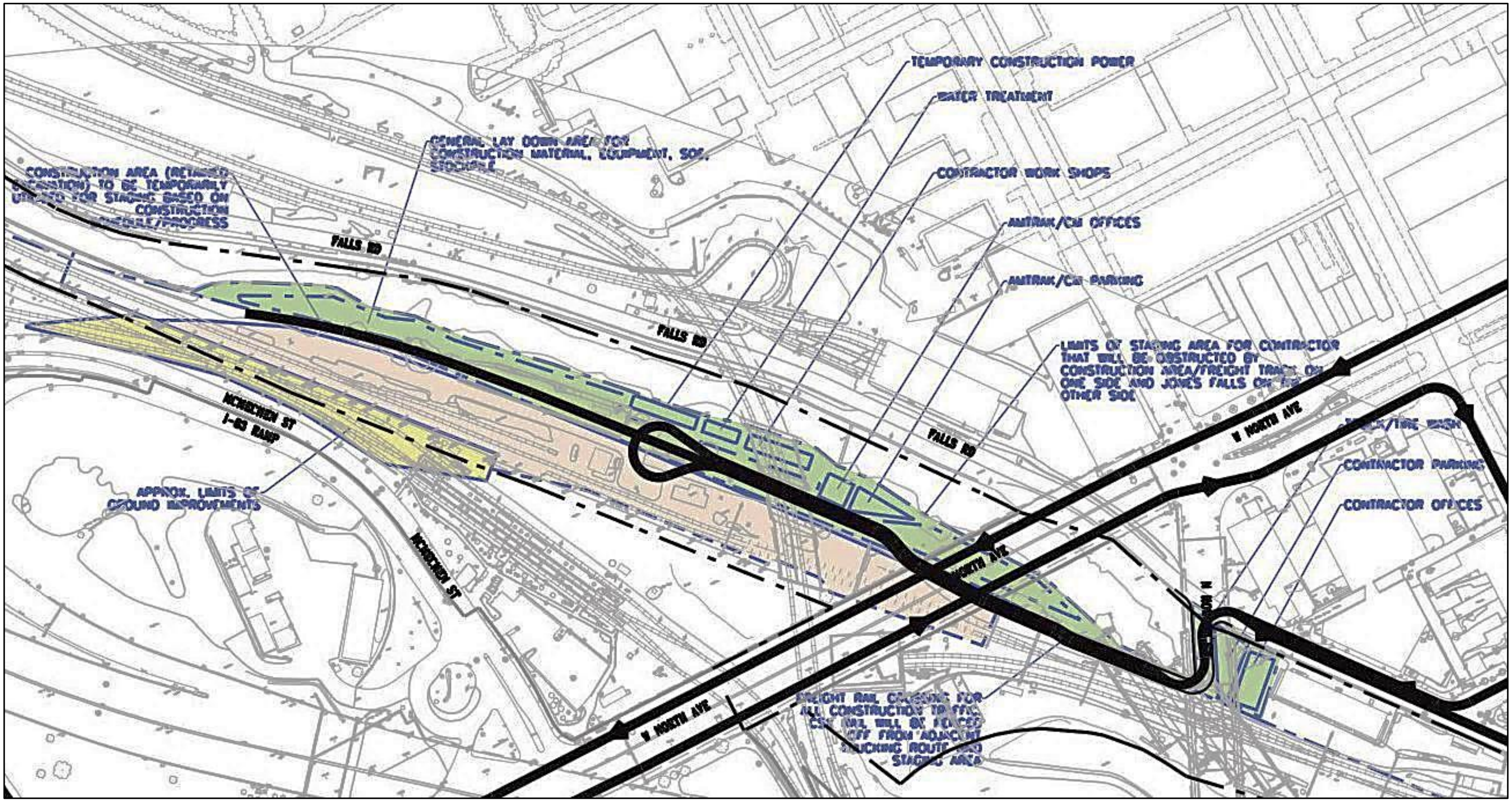

LIMITS OF CONSTRUCTION WORK AREA FOR NORTH VENTILATION FACILITY
FALLS RD
MCMECHEN ST
I-83 RAMP
TEMPORARY CONSTRUCTION POWER
LIMITS OF CONSTRUCTION STAGING AREA
PARKING
WATER TREATMENT, VENTILATION, SHOTCRETE PUMP
R = 37'
MCMECHEN ST
MAIN SITE OFFICE
WORKSHOP
LENNOX ST
TIRE WASH

Figure IV-35: Construction Staging Area Near North Portal


CONSTRUCTION AREA (RETAINED EXCAVATION) TO BE TEMPORARILY UTILIZED FOR STAGING BASED ON CONSTRUCTION SCHEDULE/PROGRESS
GENERAL LAY DOWN AREA FOR CONSTRUCTION MATERIAL, EQUIPMENT, SOE STOCKPILE
TEMPORARY CONSTRUCTION POWER
WATER TREATMENT
CONTRACTOR WORK SHOPS
AMTRAK/CM OFFICES
AMTRAK/CM PARKING
LIMITS OF STAGING AREA FOR CONTRACTOR THAT WILL BE OBSTRUCTED BY CONSTRUCTION AREA/FREIGHT TRACK ON ONE SIDE AND JONES FALLS ON THE OTHER SIDE
FALLS RD
FALLS RD
FALLS RD
W NORTH AVE
TRUCK/TIRE WASH
CONTRACTOR PARKING
CONTRACTOR OFFICES
W NORTH AVE
W NORTH AVE
MCMECHEN ST
I-83 RAMP
MCMECHEN ST
APPROX. LIMITS OF GROUND IMPROVEMENTS
FREIGHT RAIL CROSSING FOR ALL CONSTRUCTION TRAFFIC. CSX RAIL WILL BE FENCED OFF FROM ADJACENT TRUCKING ROUTE AND STAGING AREA

3. Truck Routes for Construction Staging Areas

For the Intermediate Ventilation Facility construction staging area, truck access to the site would be via I-83 southbound to the West North Avenue exit, and west on West North Avenue to the Intermediate Ventilation Facility site. Truck egress from the site would be eastbound on West North Avenue, and the entrance ramp on to I-83 to northbound I-83.

For the south portal construction staging area, truck access to the site would be via eastbound US 40 to northbound Pulaski Street, to eastbound Harlem Avenue, and to northbound Payson Street. At that point, there are two separate access routes. The first turns onto westbound Lanvale Street and then northbound Brice Street into the construction staging area. The second continues on northbound Payson Street to access the construction staging area near Riggs Avenue. Truck egress would be from the construction staging area to eastbound Mosher Street, to southbound Monroe Street, and to US 40 west.

For the North Ventilation Facility construction staging area, truck access to the site would be via I-83 southbound to the West North Avenue exit, east on West North Avenue, and north on the I-83 Ramp/McMechen/light rail access road to the construction staging area. Truck egress would be from the construction staging area to the I-83 Ramp/McMechen/light rail access road to westbound West North Avenue, and the entrance ramp onto I-83 northbound.

For the north portal construction staging area, truck access to the site would be via I-83 southbound to the West North Avenue exit, east on West North Avenue, south on Maryland Avenue, west on Lafayette Avenue, north on Falls Road, then turning left into the construction staging area. Truck egress would be from the construction staging area to south on Falls Road, east on Lanvale Street, north on Charles Street, west on West North Avenue, and the entrance ramp onto I-83 northbound.

4. Impacts to Light Rail, Metro, and I-83

The Preferred Alternative would be constructed below the existing MTA Light Rail line in the vicinity of the North Avenue Light Rail Station. The Project Team will coordinate with MTA to ensure minimal disruption to light rail service during construction of the Project. It is possible that disruptions to light rail service may occur for a limited timeframe; however, construction schedules would be developed to minimize disruptions to the extent possible, such as overnight when light rail revenue operations are not occurring or potentially over a weekend.

The alignment of the tunnels would be constructed at an adequate depth below the Baltimore Metro tunnels to ensure there is no disruption to MTA Metro service or damage to the MTA Metro tunnels.

The Preferred Alternative maintains the existing northbound I-83 off ramp to West North Avenue. Construction of the Preferred Alternative may include temporary closures of the ramp. The Project team will coordinate any short-term closures with the Baltimore City and the Federal Highway Administration (FHWA).

J. Capital Cost Summary

A capital cost estimate has been calculated for the Preferred Alternative and is shown in **Table IV-4**. The total capital cost for the Project is estimated at $4.52 billion in escalated dollars, assuming Project completion in 2025. The capital cost estimate is comprised of all major Project components as shown in the table below, including: construction for four new tunnels, trackwork, new MARC station, support facilities, sitework, Amtrak force account and flagging, right-of-way, engineering design, program management, agency support, construction support and management, mitigation, and risk. The cost estimate also includes cost escalation, assuming a design and construction period leads to Project completion in 2025. Any lengthening of the Project schedule would increase costs over this estimate. This estimate includes the preferred Intermediate Ventilation Facility site at 900-940 West North Avenue.

Table IV-4: Capital Cost Estimate for the Preferred Alternative

Code	Description	Item Cost (Million)	Cost Summary (Million)
1	***Construction Cost - Four New Tunnels***		
10	GUIDEWAY AND TRACK ELEMENTS	$1,020	
20	STATIONS, STOPS, TERMINALS, INTERMODAL	$5	
30	SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	$310	
40	SITEWORK AND SUPPORT CONDITIONS	$270	
50	SYSTEMS	$305	
	Total Construction		$1,910
2	***Force Account and Flagging***		
2.1	Amtrak F/A	$20	
2.2	LRT F/A	$4	
	Total F/A		$24
3	***Right of Way***		
3.1	Real Estate	$76	
	Total ROW		$76
4	***Existing B&P - Repair Construction Cost***		
	Total Construction		*TBD*
5	***Engineering Cost***		
5.1	Program Management (including the PM of existing Tunnel)	$15	
5.2	MDOT/City of Baltimore Support	$20	
5.3	Amtrak Project Support Phase 1	$80	
5.4	Final Engineering	$115	
5.5	Mitigation Tracking & Document Revision FE	$1	
5.6	Construction Support	$150	
5.7	Construction Management	$99	
	Total Engineering Cost		$480
6	***Design Development/Risk***		
6.1	New Tunnel Design Development	$573	
6.2	New Tunnel - Risk Cost	$191	
6.3	Engineering/Management Change Process	$45	
6.4	ROW	$11	
	Total Design Development/Risk		$820
7	***Total Project Cost (2015 $$$)***		
7.1	Sum of Categories 1 through 6	$3,310	
7.2	Mitigation Cost	$50	
	Total Project Cost (2015 $$$)		$3,360
8	***Escalation and Risk***		
8.1	Const. & F/A	580	
8.2	ROW	15	
8.3	Design Development & Risk Costs	385	
8.4	Engineering Cost	180	
	Total Escalation and Risk		1,160
	Total Project Budget for Completion in 2025		**$4,520**

Chapter V

B&P TUNNEL PROJECT

Affected Environment

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation

V. AFFECTED ENVIRONMENT

This section presents the existing environmental conditions of resources in the Project Study Area. The human and natural environmental resources within the Project Study Area and associated areas were identified in order to analyze how the Project could potentially affect the environment. Potential environmental impacts to these resources are discussed in **Chapter VI**. Since issuance of the DEIS in December 2015, FRA revised Alternatives 3A, 3B, and 3C in response to public comments and additional engineering work, and identified Alternative 3B as the Preferred Alternative in this FEIS. Because elements of Alternative 3B have been developed to a higher level of design since the DEIS, FRA conducted additional efforts concerning the inventory of resources within the Project Study Area based on the Preferred Alternative and available data. These efforts included: 1) revised visual assessments based on above-ground elements, 2) field surveys and wetland, tree and forested area delineations, 3) detailed noise and vibration modeling, and 4) additional historic properties identifications and effect assessments, and continued coordination with Section 106 consulting parties at meetings.

The resources considered in the environmental analysis include: air quality; water quality; noise and vibration; solid waste disposal; natural ecological systems; wetlands; endangered species; flood hazard evaluation and floodplain management; coastal zone management; production and consumption of energy; use of natural resources other than energy; aesthetic environment; transportation; elderly and handicapped; land use; socioeconomic environment; public health; public safety; recreation areas and opportunities; minority, race, and ethnicity and low-income populations; sites of historical, archaeological, architectural, or cultural significance; construction impacts, and hazardous materials. Each resource is discussed in proportion to its applicability to the B&P Tunnel Project. The Project Study Area is within the Maryland Coastal Zone.

A. Socioeconomics

Existing socioeconomic and demographic conditions within the Study Area include population, land use and zoning, transportation, economy, housing, neighborhood and community facilities, and minority ethnicity and low-income populations. The data used for the analysis are from American Factfinder (US Census Bureau, 2013b) and the American Community Survey (ACS) 2009-2013 (US Census Bureau, 2013a), developed by the US Census Bureau, US Bureau of Labor Statistics (BLS), US Department of Housing and Urban Development (HUD), Maryland Department of Commerce, Baltimore Development Corporation, Baltimore Department of Housing and Community Development, and Baltimore County Department of Economic and Work Force Development. See **Appendix E** for socioeconomic data tables.

FRA defined the Study Area boundary for socioeconomic evaluation using a combination of Census Block Group and Census Tract boundaries. The area was developed to include block groups and tracts within approximately 500 feet of the alternative centerlines of the alternatives considered in the *Alternatives Report*. The Study Area boundary for socioeconomic evaluation is shown in **Figure V-1**.

1. Population

The data presented in this section describes the population and demographic character of the Study Area, local region, and state. Population data also help identify communities of concern or environmental justice (EJ) communities. For this assessment, Census Block Group data was used to provide the highest level of comparable data. Where block group data was unavailable, Census Tract level data was used.

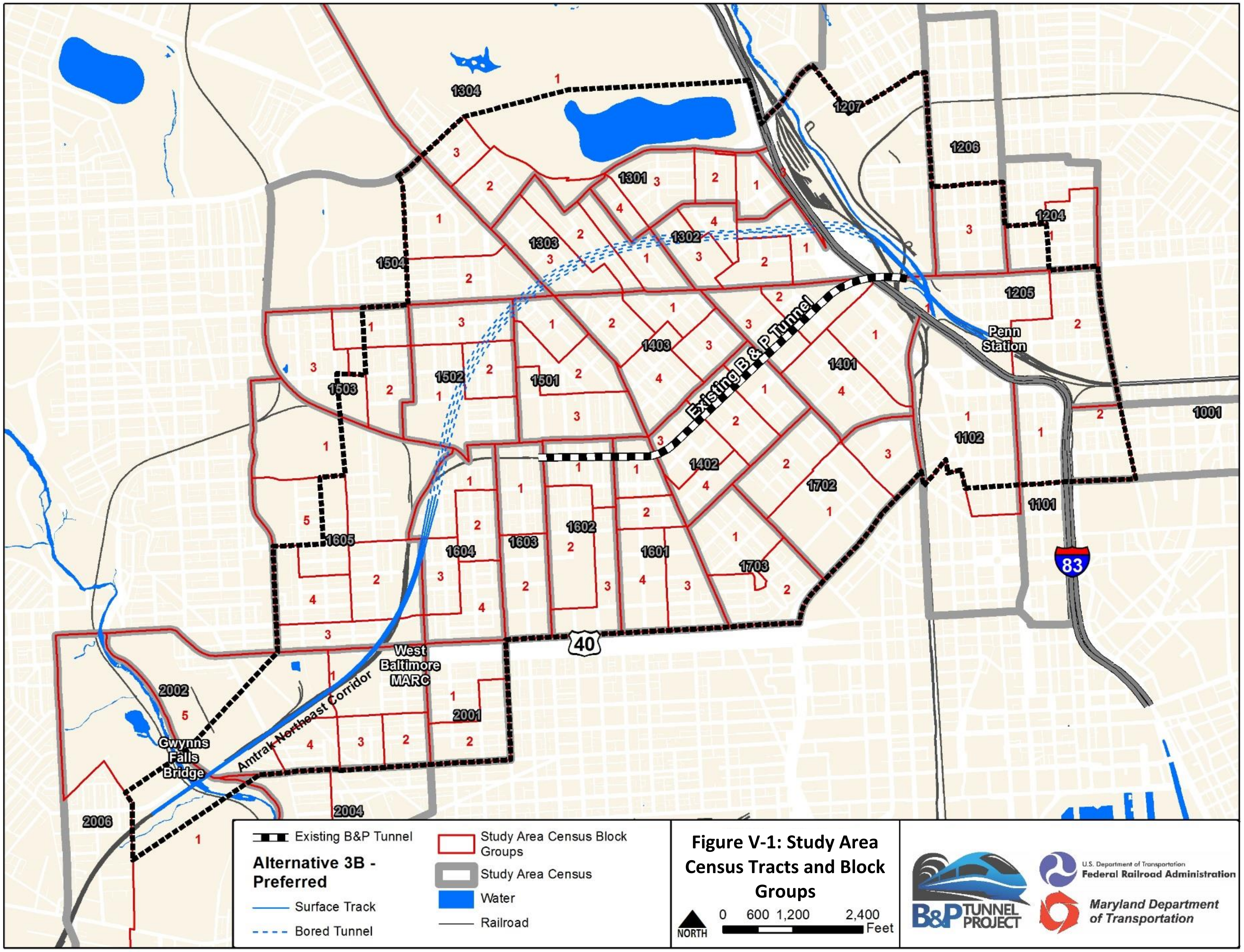


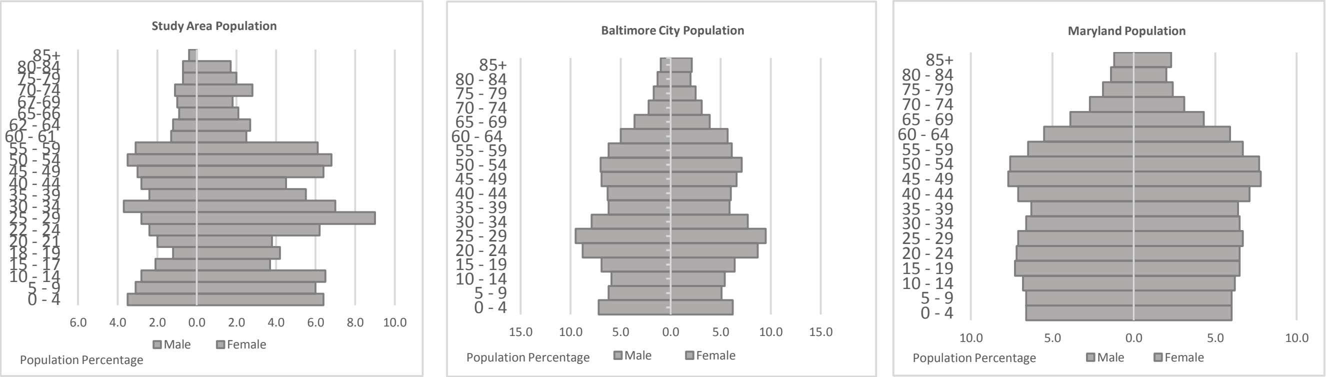
Figure V-1: Study Area Census Tracts and Block Groups

Based on Census Block Group data, the total population of the Study Area was approximately 65,762 in 2013 (US Census Bureau, 2013a), which represents 10.5 percent of Baltimore City's population and 1.1 percent of the state population. The residents are distributed across 77 individual Census Block Groups. Census Block Group 1101-1 is the most populous block group with a population of 2,612 residents, located in the Mid-Town Belvedere neighborhood, in the northeast portion of the Study Area. Census Block Group 2002-2 is the least populous block group with a population of 249 residents, located in the Penrose/Fayette Street neighborhood in the southwest portion of the Study Area. The average number of residents per block group was 854 people.

a. Age

Figure V-2 shows the age distribution of male and female populations in the Study Area, with Baltimore City and Maryland provided for comparison. The most populous age cohort in the Study Area is age 25-29 for females, and age 30-34 for males. In Baltimore City, the most prevalent age cohort is aged 25-29 for both males and females; in Maryland the most prevalent cohort is age 45-49 for both males and females. The Study Area population pyramid skews noticeably towards female; males are generally underrepresented relative to the city or state, particularly in the 15-17, 18-19, and 20-21 age cohorts.

Figure V-2: Age Distribution of the Study Area



Source: US Census Bureau, American Community Survey, 2009 – 2013, Five year estimates (US Census Bureau, 2013a).

b. Racial Composition

Table V-1 presents a summary of the racial composition of the Study Area, Baltimore City, and Maryland. This data is detailed by Census Block Group in **Appendix E**. In 2013, the majority of the Study Area population was African American or Black Alone (81.2 percent), which is higher than that of Baltimore City (63.0 percent) and substantially higher than Maryland (29.4 percent). Nearly thirteen percent (12.8 percent) of the Study Area population is classified as White Alone, which is approximately half the percentage of the White population in Baltimore City, and substantially less than that of Maryland. The remaining populations include Asian Alone, Other Alone, and Two or More Races Alone, each representing below three percent of the Study Area population. The total Hispanic or Latino population within the Study Area was 1.3 percent, compared to 4.0 percent for Baltimore City and 8.5 percent for Maryland.

Table V-1: Racial Composition of the Study Area

Category	Maryland	Baltimore City	Study Area
Total Population	5,834,299	621,445	65,762
White Alone	3,406,243 (58.4%)	174,590 (28.0%)	8,400 (12.8%)
African American or Black Alone	1,717,582 (29.4%)	389,758 (63.0%)	53,407 (81.2%)
Asian Alone	332,620 (5.7%)	14,822 (2.0%)	1,515 (2.3%)
Other[1] Alone	215,749 (3.7%)	1,362 (0.0%)	163 (0.2%)
Two or More Races Alone	162,105 (2.8%)	12,400 (2.0%)	1,317 (2.0%)
Total Hispanic or Latino	493,310 (8.5%)	26,772 (4.0%)	844 (1.3%)

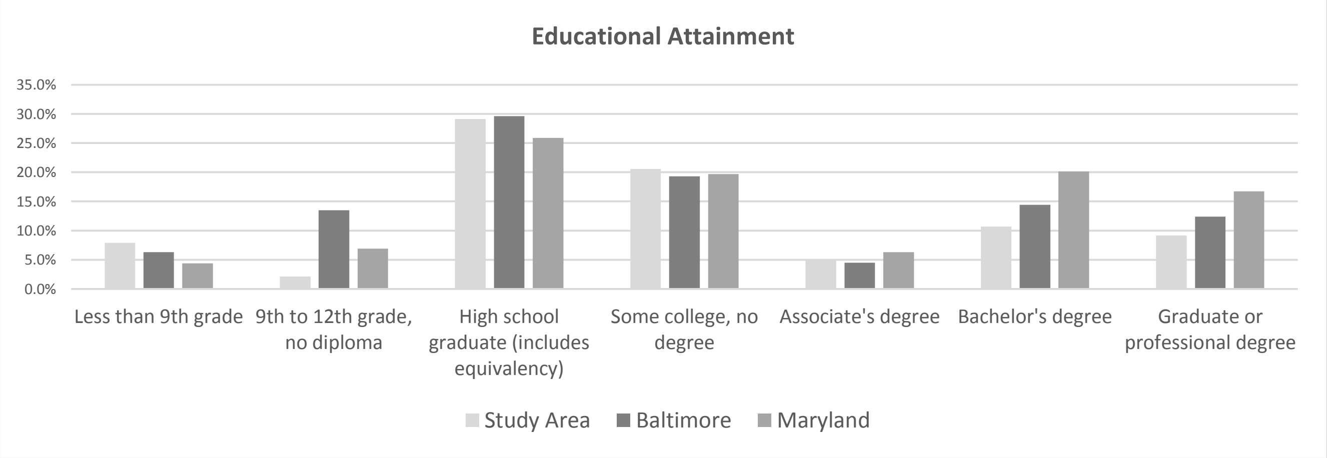
Source: US Census Bureau, American Community Survey, 2009 – 2013, Five year estimates (US Census Bureau, 2013a).

[1] *Other includes American Indian and Alaska Native alone, Native Hawaiian and Other Pacific Islander alone and some other race alone.*

c. Educational Level

Figure V-3 shows the highest level of educational attainment of the Study Area, Baltimore City and Maryland for the population 25 years and over. Approximately 30.0 percent of the Study Area have a high school degree as their highest educational attainment, similar to Baltimore City, whereas 25.9 percent of the population statewide have a high school degree as their highest educational level. Of note, approximately eight percent of the Study Area have less than a 9th grade education, substantially more than Baltimore City and statewide (6.3 percent and 4.4 percent respectively) The percentage of people who have a Bachelor's degree as the highest level of education is lower within the Study Area (10.7 percent), than in Baltimore City (14.4 percent) and approximately half that of Maryland (20.1 percent). Graduate or professional degree attainment as the highest level of education is generally lower within the Study Area, relative to Baltimore City and Maryland (9.2 percent, 12.4 percent and 16.7 percent respectively).

Figure V-3: Educational Level of the Study Area



Source: US Census Bureau, American Community Survey, 2009 – 2013, Five year estimates (US Census Bureau, 2013a).

d. Poverty

The US Census Bureau Poverty Threshold for 2013 was an annual median household income of $23,834 for a family of four. In 2013, the percent of the Study Area population for whom poverty status was determined with income in the past 12 months below the poverty level was 30.6 percent, compared to 23.8 percent in Baltimore City and 9.8 percent for Maryland. Census Tract 1402 Block Group 4, located in the Upton neighborhood and Census Tract 1702 Block Group 1, which spans the Upton and Madison Park neighborhoods, had the most households below poverty level (216 and 217 respectively). Poverty status is further assessed in **Section V.A.8**.

e. Linguistic Isolation

A "limited English-speaking household" is defined by the US Census Bureau as: "…one in which no member 14 years old and over (1) speaks only English or (2) speaks a non-English language and speaks English 'very well.' In other words, all members 14 years old and over have at least some difficulty with English."

According to the US Census 2013 ACS data, there are approximately 422 limited English-speaking households in the Study Area block groups, or 1.6 percent of the total households. This is proportionately somewhat lower than Baltimore City (2.2 percent) or statewide (3.1 percent).

Block Groups in the Study Area range from zero limited English-speaking households to approximately 15 percent (Block group 1206.003). **Figure V-9** depicts the Study Area block groups analyzed. **Appendix E** provides the information on individual block groups along with Baltimore City and Maryland.

f. Commute (Journey to Work)

According to the US Census Bureau, Commute (or Journey to Work) refers to a worker's travel from home to work. Place of work refers to the geographic location of the worker's job. **Appendix E** depicts the commute time and mode of residents in the Study Area, Baltimore City, and statewide. Most people within the Study Area use an automobile (car, truck, or van) to get to work (59 percent), although it is a lower percentage than the population that takes an automobile within Baltimore (73 percent) and significantly lower in Maryland (87 percent). Census Block Groups 1101.001 and 1102.001, located in the Mount Vernon and Midtown Belvedere neighborhoods have the largest number of people who use an automobile to commute to work (829). Census Block Group 1101.001 also has the largest number of people who commute via public transportation (377). Eight percent within the Study Area walk to work and two percent use other modes (includes taxi cab, motorcycle, or bicycle). Eighteen percent have a commute that is less than 15 minutes to work, similar to Baltimore City and Maryland.

2. Housing

Housing types, tenure, vacancy, and ownership rates are useful in understanding the availability of suitable housing in areas where residential property displacements could occur as a result of the Project.

The number of housing units and occupancy within the Study Area is summarized in **Table V-2**. In 2013, there were 38,059 housing units within the Study Area, representing 12.8 percent of the total housing units within Baltimore City and 1.6 percent of statewide housing units (US Census Bureau, 2013a). Approximately 69.3 percent of these housing units were occupied, which is lower than the proportion of occupied housing in Baltimore City (81.5 percent) and Maryland (89.9 percent). Based on field-verified data, rowhouses are the most common residential buildings in the Study Area.

Table V-2: 2013 Housing Units and Occupancy Characteristics

Geographic Area	Total Housing Units	Occupied Housing Units	Owner Occupied Housing Units (Percent)	Average People/Occupied Housing Unit
Maryland	2,387,285	2,146,240	67.6	2.8
Baltimore City	296,256	241,455	48.3	2.6
Study Area	**38,059**	**26,358**	**30.9**	**2.8**

Source: US Census Bureau (US Census Bureau, 2013a).

According to the ACS, about 30.9 percent of the occupied housing units within the Study Area Block Groups were owner-occupied in 2013. Comparatively, the percentage of owner-occupied housing units within Baltimore City and Maryland was 48.3 and 67.6 percent, respectively. The average number of people per occupied housing unit for the Study Area Block Groups was 2.5, similar to the Baltimore City average of 2.6, and Maryland at 2.8 people.

The Study Area currently contains six publicly-owned housing developments, with a total of 2,467 units (accounting for roughly 3% of all publicly-owned housing in Baltimore City), dispersed throughout the Study Area. There are also 22 affordable housing apartment developments with a total of 3,111 units (representing roughly 5% of all affordable housing apartment developments in the city). Seven of these developments provide family housing, 12 serve the elderly, and two provide disabled housing. One development is not classified (HABC, Accessed 2014).

3. Minority Race and Ethnicity and Low-Income Populations

The terms “minority” and “low-income” are defined in the USDOT Order on Environmental Justice. The following definitions have been used in this analysis:

- Minority Individual: A minority individual belongs to one of the following groups: American Indian or Alaskan Native, Asian American, Native Hawaiian or Other Pacific Islander, Black (not of Hispanic origin), and Hispanic or Latino.
- Minority Populations: Any readily identifiable groups of minority people who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient people (such as migrant workers or Native Americans) who would be similarly affected by a proposed USDOT program, policy, or activity.
- Low-Income Individual: The Order definition is a person whose median household income is at or below the US Health and Human Services (HHS) poverty guidelines. In 2014, the official poverty threshold for a family/household of four was an annual median household income of $23,850 (USDHHS, Accessed 2014). Because of slight differences in the length of time encompassed by datasets, the US Census Bureau’s 2014 poverty threshold for a household of four (no children) was $24,418.
- Low-Income Population: Any readily identifiable group of low-income people who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient people (such as migrant workers or Native Americans) who would be similarly affected by a proposed DOT program, policy, or activity.

The following data were used to identify minority and low-income populations:

- Minority Populations: ACS 2009-2013 5-year estimate (US Census Bureau, 2013a), at the Census Block Group level, provided the basis for identifying minority populations in the Study Area.
- Low-Income Populations: Poverty data was obtained from the ACS 2009-2013 five-year estimate at the Census Block Group level. The dataset is the most current dataset based on US Census Bureau thresholds of poverty. It is typically used for statistical analyses and its thresholds are not substantially different from HHS guidelines; therefore, poverty level is used to indicate low-income populations.
- Data sources to confirm the location of minority and low-income populations include the National Center for Educational Statistics (NCES), government-assisted housing programs, historical references, city officials, field visits, community meetings, and a review of revitalization efforts in the Study Area.

Census Block Groups have populations between 600 and 3,000 people. They vary in size depending on an area’s population density. They are the smallest geographical unit for which reliable data is available; they can generally be thought of as representing neighborhoods.

The Study Area includes all or parts of 77 Census Block Groups in Baltimore City. In 2013, the total population of the Study Area by Census Tract was 65,762 people (US Census Bureau, 2013a). For those people with race or ethnicity status identified in the Study Area in the ACS 2009-2013 dataset, 57,362 (87.2 percent) were identified as minorities, which was higher than Baltimore City’s average of 72.0 percent. **Table V-3** details minority race and ethnicity data for the Study Area. **Figure V-4** shows the analyzed Census Block Groups.

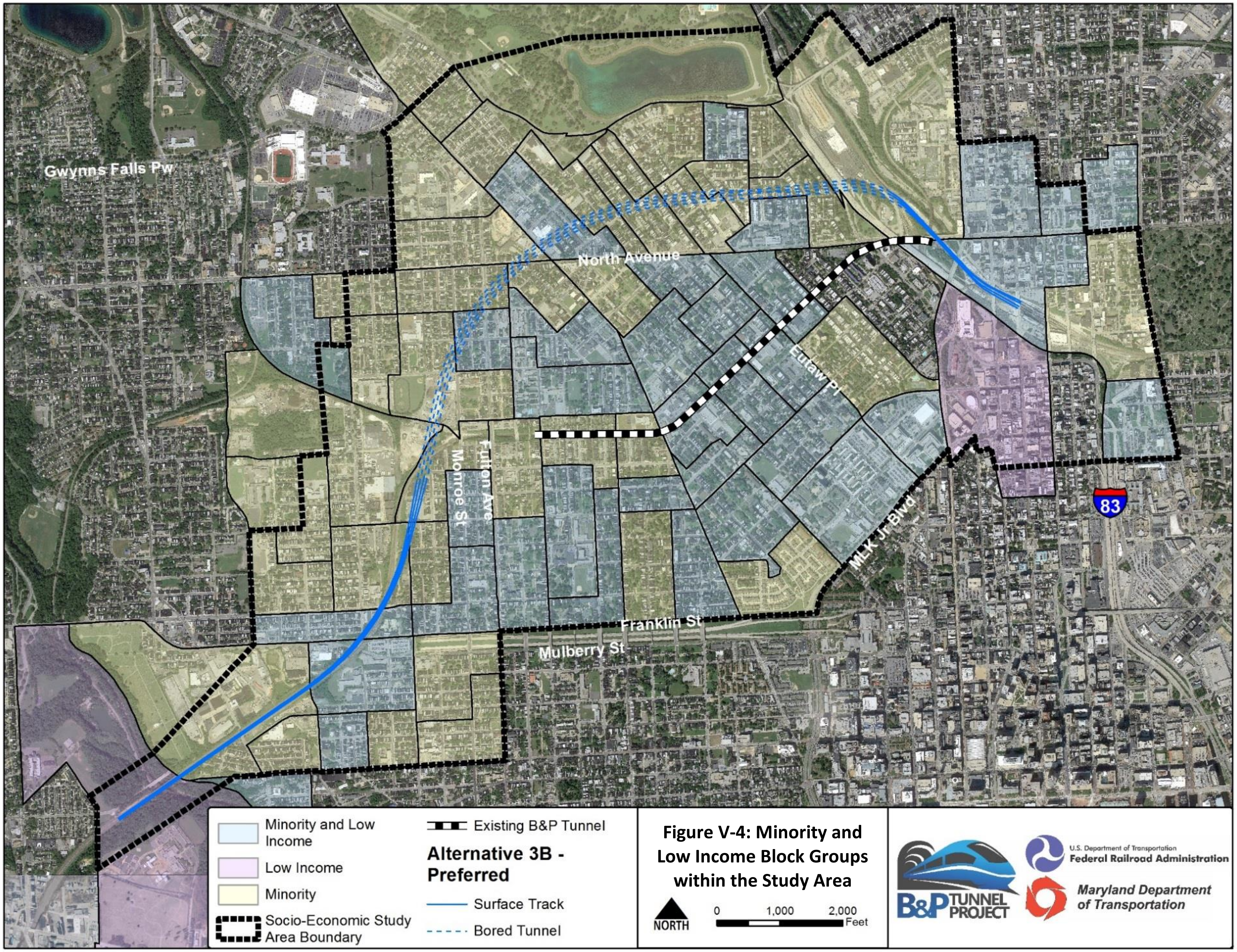


Figure V-4: Minority and Low Income Block Groups within the Study Area

Of the 26,358 households for which income was calculated in the Study Area, 8,812 households (33.4 percent) had income at or below the federal poverty level, which indicates a low-income population for the purposes of this study. The ACS data showed Study Area Census Block Groups contained a percentage of low-income households that was substantially higher (33.4 percent) than Baltimore City's average of 22.0 percent.

Other information sources useful in identifying minority and low-income populations include public housing and assistance programs, area revitalization programs, and community outreach. According to the Housing Authority of Baltimore City, there are six publicly-owned housing developments in the Study Area that provide 2,467 individual units (**Table V-4**) (HABC, Accessed 2014). The developments range from 75 to 970 units. Two are family developments, two are mixed-population housing, and two contain both mixed populations as well as family housing. The housing developments are widely dispersed throughout the Study Area and are located within minority race and/or ethnicity and low-income populations, with the exception of the J. Van Story Branch Apartments. Residents of the housing developments must meet income limits of $33,200 for a family of four, along with other qualifying criteria, in order to be eligible for the Public Housing Program.

Table V-3: Population and Minority Statistics in Maryland, Baltimore City, and the Study Area by Block Group

Category	Maryland	Baltimore City	Study Area
Total Population	5,834,299	621,445	65,762
White Alone	3,406,243 (58.4%)	174,590 (28.0%)	8,400 (12.8%)
Black Alone	1,717,582 (29.4%)	389,758 (63.0%)	53,407 (81.2%)
Asian Alone	332,620 (5.7%)	14,822 (2.0%)	1,515 (2.3%)
American Indian and Alaska Native Alone	17,535 0.30%	1,563 (0.0%)	82 (0.1%)
Native Hawaiian and Other Pacific Islander Alone	2,570 0.04%	178 (0.0%)	34 (0.1%)
Other Race Alone	215,749 (3.7%)	1,362 (0.0%)	163 (0.2%)
Two or More Races	162,105 (2.8%)	12,400 (2.0%)	1,317 (2.0%)
Total Hispanic or Latino	493,310 (8.5%)	26,772 (4.0%)	844 (1.3%)
Total Minority	2,921,366 (50.1%)	446,855 (72.0%)	57,362 (87.2%)

Source: US Census Bureau (US Census Bureau, 2013a).
Hispanic or Latino people may identify as any race.
[1] *Does not include Hispanic or Latino population.*
[2] *Two or more races do not include people who identify as Hispanic or Latino.*
[3] *All people who identify as non-White, non-Hispanic or Latino, and all people who identify as Hispanic or Latino, regardless of race.*

Affordable housing information was obtained from the HUD Affordable Apartment search that identifies lower cost housing supported by grant programs. There are 22 affordable housing apartment developments, with a total of 3,111 units in the Study Area. Developments range from 12 to 521 units; where seven provide family housing, 12 serve the elderly, and two provide housing for people with disabilities. One of the apartment developments is not classified. Fourteen affordable housing apartment complexes are located within minority race and/or ethnicity and low-income populations, and six are located in areas with only minority race and/or ethnicity populations; the remaining two public housing complexes are located outside of minority race and/or ethnicity and low-income areas. In order to be eligible for these apartments, residents cannot earn more than the income limit specified by the apartment complex.

Table V-4: Study Area Public Housing

Name	Address	Housing Units	Residence Type
Heritage Crossing (Hope VI)	600 Brune Street, Baltimore, MD 21201	75	Family
Gilmor Homes	640 Balmor Court, Baltimore, MD 21217	571	Family
Chase House	1020 Cathedral Street, Baltimore, MD 21201	189	Mixed Population
J. Van Story Branch Apartments	11 W. 20th Street, Baltimore, MD 21218	357	Mixed Population
Lakeview Towers/Lakeview Extension & Oswego Mall	717 Druid Park Lake Drive, Baltimore, MD 21217	305	Mixed Population and Family Housing
McCulloh Homes & Extension/Albert Spencer Gardens	501 Dolphin Street, Baltimore, MD 21217	970	Mixed Population and Family Housing

Source: Baltimore Housing (HABC, Accessed 2014).

In 2014, 28 out of the 29 Census Tracts in the Study Area were qualified Low-Income Housing Tax Credit (LIHTC) program tracts (HUDuser, 2014). Census Tract 1101, located in the Mount Vernon neighborhood, is the only Census Tract in the Study Area that is not a LIHTC tract. In order to qualify for the LIHTC, a proposed housing development must be in a Census Tract having either 1) a poverty rate of at least 25 percent or 2) 50 percent or more of its households have incomes below 60 percent of the metropolitan or non-metropolitan area median household income (SBA, Accessed 2015).

The median monthly housing cost for 25 out of 29 Census Tracts in the Study Area is below that of Baltimore City ($1,005) (US Census Bureau, 2013a). Census Tracts 1101 (Mount Vernon), 1204 (Barclay), 1207 (Remington), and 1303 (Penn North) all had median housing costs above Baltimore City.

According to ACS poverty data from 2013, 6,113 households with incomes below the poverty level in the Study Area received federal food stamps and/or Supplemental Nutrition Assistance Program benefits the prior year. Another 4,316 of similar households in poverty did not receive these benefits, suggesting more needs could be met (US Census Bureau, 2013a). During the 2011 to 2012 school year, the majority of Kindergarten through 12th grade students in the Study Area received free or reduced-cost school lunches, as did the majority of citywide grade-school students (76.2 percent) (DataMind, 2012).

The majority of the Study Area also has existing urban renewal plans. These plans focus on addressing urban blight and providing employment opportunities for residents, while improving community services and conditions supporting property values.

4. Land Use and Zoning

a. Land Use

This section describes existing land use within the Study Area, Baltimore City, and Maryland. Land use data were obtained from Baltimore City (Baltimore City, 2008) and the Maryland Department of Planning (MDP, 2010).

Land use in the Study Area is mostly residential and dispersed fairly evenly. Other land uses in the Study Area include institutional, primarily west of Baltimore Penn Station; transportation-related; open space, scattered throughout the Study Area as small neighborhood parks, playgrounds, and athletic courts, with the largest area being Druid Hill Park in the northeast; commercial, located primarily along the major roads of North Avenue, Pennsylvania Avenue, and West Lafayette Avenue; industrial, concentrated along the NEC in the southwest and near the MTA North Avenue Light Rail Yard in the northeast; and mixed-use. **Figure V-5** displays the existing land use within the Study Area.

Table V-5 summarizes land use in the Study Area, Baltimore City, and Maryland. Because of different classifications, the latest state land use data (MDP, 2010) are not broadly comparable to Baltimore City data (2008), except for residential, commercial, and industrial land uses.

The Study Area encompasses approximately five percent of the total land in Baltimore City. Most land use is residential, both in the Study Area and Baltimore City (49.3 and 44.2, respectively). Institutional use represents the next greatest percentage (14.2 percent) in the Study Area; in Baltimore City, institutional land use represents 12.7 percent of the land area. In the Study Area, transportation is the next most prevalent land use at 11.2 percent; this percentage is nearly twice that of Baltimore City (6.3 percent). Less of the Study Area is open space (9.6 percent) and industrial (6.9 percent) compared to Baltimore City at 14.2 percent and 15.7 percent, respectively. More land is commercial (7.7 percent) and mixed-use (1.1 percent) in the Study Area than in Baltimore City (6.2 percent and 0.7 percent, respectively).

Table V-5: Land Use Summary

Land Use Type	Study Area (Acres)	Study Area (Percent)	Baltimore City (Acres)	Baltimore City (Percent)
Residential	1,327.9	49.3	23,915.8	44.2
Institutional	382.0	14.2	6,899.8	12.7
Transportation	301.3	11.2	3,390.5	6.3
Open Space	259.9	9.6	7,699.7	14.2
Commercial	208.1	7.7	3,339.6	6.2
Industrial	185.6	6.9	8,509.7	15.7
Mixed	28.8	1.1	390.1	0.7
Total	2,693.6	100.0	54,145.2	100.0

Source: State of Maryland Land Use and Shapefile (MDP, 2010; Baltimore City, 2008).

b. Zoning

Zoning in the Study Area is generally consistent with citywide land use (**Table V-6** and **Figure V-6**). Open space constitutes nearly 10 percent of land use in the Study Area; however, no land in the Study Area is actually zoned as open space.

Study Area zoning is comparable to citywide zoning in most categories, except more properties are zoned proportionately as Community Businesses, Central Commercial, Community Commercial, and Office-Residences. Substantially less acreage is zoned as industrial in the Study Area compared to citywide. The right-of-way for the existing B&P Tunnel and approach tracks are zoned as industrial and/or "approved conditional use" through other zoning such as residential and commercial. According to current zoning, no railroad yards or shops are identified outside industrial zoning.

5. Transportation

a. Northeast Corridor (NEC)

The NEC runs from South Station in Boston through Pennsylvania Station in New York City and terminates at Union Station in Washington, DC. The NEC in the Study Area is shared by Amtrak Northeast Regional and Acela Express intercity passenger, MARC commuter, and NS freight operations. Amtrak NEC service and some MARC Penn line trains are powered by electric overhead catenary wires, while other MARC and freight trains are powered by diesel electric locomotives. The existing B&P Tunnel currently has Plate C clearance, which only allows conventional box cars, flats, gondolas, and coal hopper cars to run through the tunnel.

The NEC moves 365 million passengers and 14 million car-miles of freight per year. A total of 145 daily trains, with a peak of 35 trains during the four-hour afternoon peak period, traverse the existing B&P Tunnel. Over the course of a year, 11.6 million passengers on Amtrak's Northeast Regional and Acela Express Services travel through the Tunnel (FRA, 2015). The NEC accommodates Amtrak Northeast Regional and Acela Express passenger trains; MARC commuter rail service; and NS freight service.

b. MARC Commuter Rail Service

MARC is a commuter rail system providing service between Baltimore City and Washington, DC. MARC Train service has two stations in the Study Area: Baltimore Penn Station and West Baltimore station. The service has a 20-minute headway during peak hours and a one-hour headway during non-peak hours. In 2012, the two stations served over 28,400 passenger trips daily (MTA, 2013). In December 2013, the MARC Penn Line began providing weekend service to Washington, DC. Fifty-seven (57) MARC trains currently use the existing B&P Tunnel each day; approximately 60 percent of these are diesel locomotives and 40 percent are electric. MTA plans to increase the number of MARC-diesel locomotives by 2019 as part of a separate undertaking by MTA.

c. Light Rail

Light Rail is a 30-mile alignment with 32 stations. In 2014, it carried over 8.1 million passengers (Maryland Department of Transportation, 2015). The Light Rail follows a north-south alignment from Hunt Valley in Baltimore County to Baltimore/Washington International Thurgood Marshall Airport (BWI) and Glen Burnie in Anne Arundel County. Light Rail connects to Amtrak, MARC, and local bus service, operated by MTA. The North Avenue Light Rail Station and Maintenance Facility is located within the study area.

d. Metro Subway

The Baltimore Metro subway is a 15.5-mile heavy rail system serving Baltimore City and Baltimore County, from Johns Hopkins Hospital in the southeast to Owings Mills in the northwest. Metro has a headway of 8 to 10 minutes and end-to-end travel time of approximately 30 minutes. Metro provides connections to the local bus service and Light Rail. In fiscal year (FY) 2016, the Metro transported 14.6 million passengers (Maryland Department of Transportation, 2015). The underground Metro tunnel is located within the Study Area.

Table V-6: Zoning Districts

Zoning District	District Description	Study Area (Acres)	Study Area (Percent)	Baltimore City (Acres)	Baltimore City (Percent)
Residential	Includes both single-family and general residential districts	1,667.6	64.1	34,976.8	65.3
Office-Residence	Primarily accommodates office and residential use in appropriate areas and locations	102.9	4.0	582.8	1.1
Neighborhood Business	Shopping convenience for people residing in nearby areas	22.1	0.8	163.3	0.3
Community Business	Designed to accommodate the needs of a large consumer population served by a neighborhood business district	205.6	7.9	2,125.3	4.0
Central Business	Provides for a great variety of large retail stores, offices, and related activities characteristic of major business streets of the downtown area and that serve the metropolitan region	24.7	0.9	290.2	0.5
Central Commercial	Provides for uses and activities in the central business district of the City	124.4	4.8	538.5	1.0
Community Commercial	Designed primarily to accommodate business, service, and commercial uses of a highway-oriented nature	116.2	4.5	1,354.6	2.5
Industrial	Intended to permit light manufacturing, warehousing and service uses, suitable for industrial and related activities.	338.6	13.0	13,436.6	25.1
Total		**2,602.1**	**100.0**	**53,468.1**	**100.0**

Source: Land Use Shapefile (Baltimore City, 2008). Table does not include parcels zoned 'Open Space.'

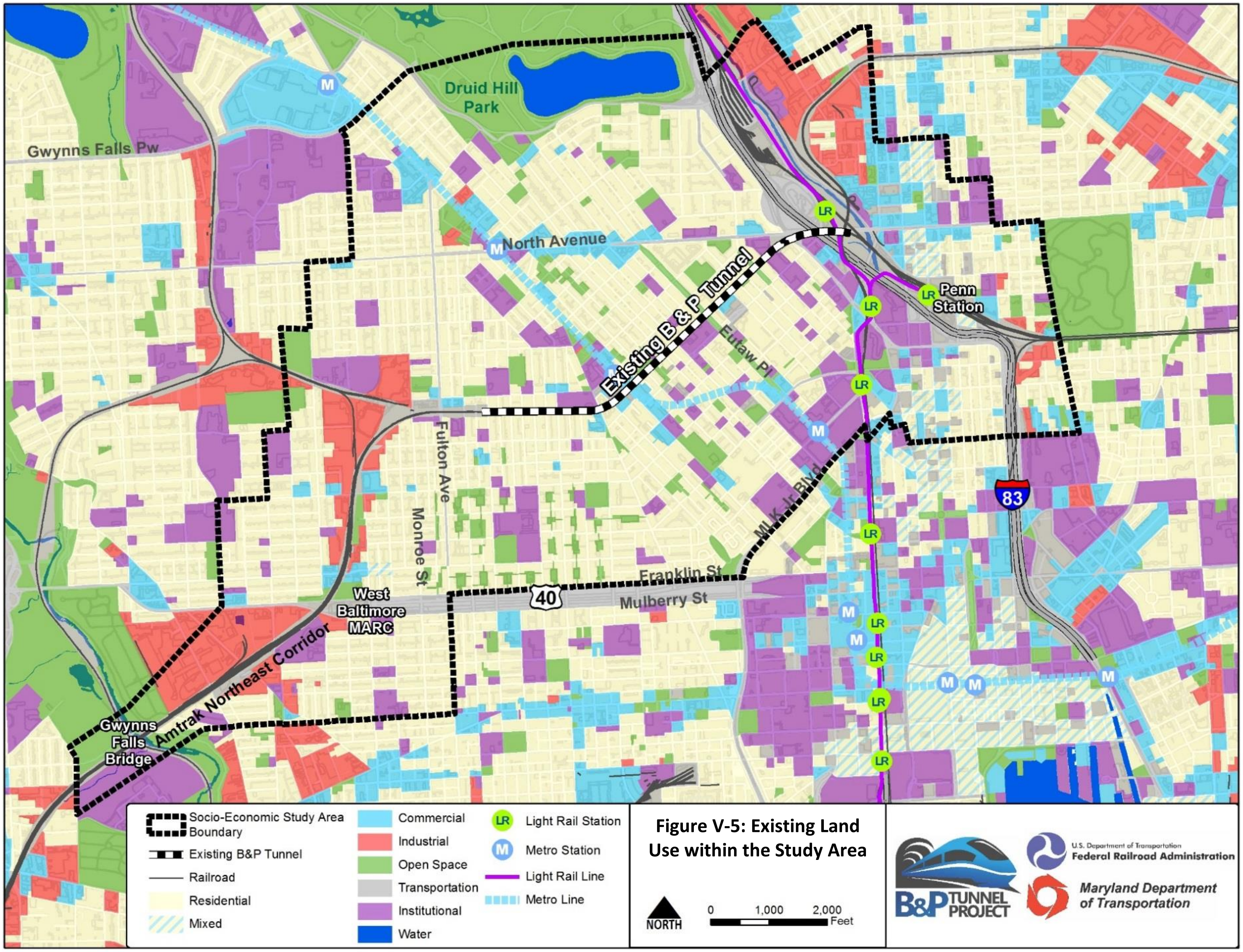


Figure V-5: Existing Land Use within the Study Area

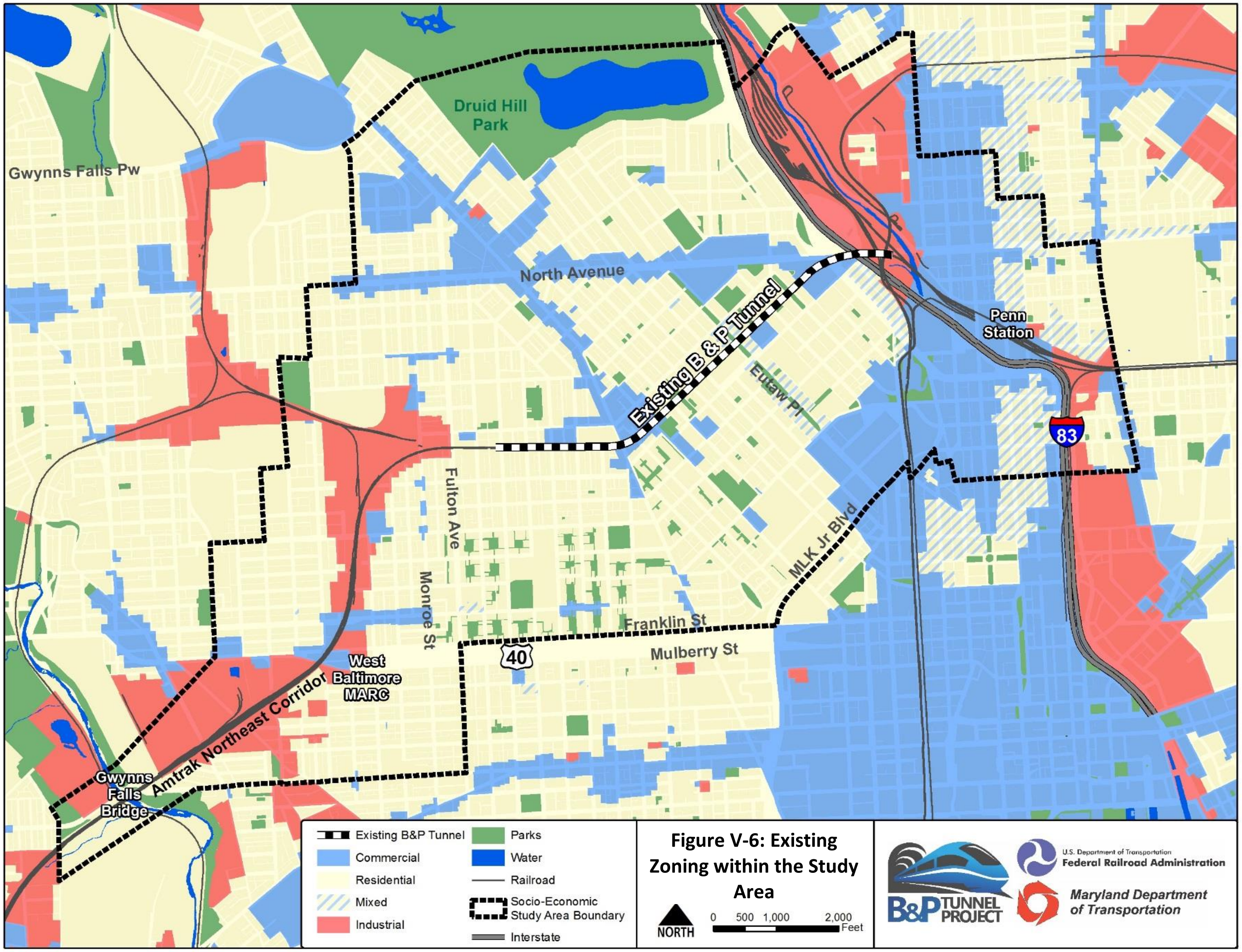


Figure V-6: Existing Zoning within the Study Area

e. Roadway Network

The major arterials that pass through the Study Area include North Avenue, West Franklin, and West Mulberry Street, which run east to west; and Pennsylvania Avenue, which runs northwest to southeast. These arterials provide connections throughout Baltimore City and facilitate short intra-city trips between residential, commercial, and employment destinations. The regional connectors in the Study Area include Martin Luther King Junior Boulevard, which provides connections to Interstate 95 (I-95) and Interstate 295 (I-295); Interstate 83 (I-83), which runs from the northern suburbs of Baltimore to downtown; and US Route 40, which connects to the west.

f. Bus Service

The Study Area is served by MTA's local bus service and Baltimore City's Charm City Circulator (CCC). MTA buses provide transit service along 57 local, limited stop, and express bus routes throughout the region. It has an average daily ridership of 242,000 and an average headway of approximately 20 minutes during peak hours and 30 minutes during non-peak hours. Within the Study Area, MTA local bus service provides connections to Amtrak, MARC, Light Rail, Metro, and the CCC.

The CCC is a free shuttle service provided by the Baltimore City Department of Transportation (DOT), with one route, the Purple Route, that passes through the Study Area. The Purple Route travels north-south through the eastern edge of the Study Area from Baltimore Penn Station in Mount Vernon to Federal Hill in south Baltimore. The service has a 15-minute headway and operates during peak and off-peak hours on weekdays and weekends, connecting with other transit services. In FY 2014, the Purple Route transported approximately 150,000 riders per month (Baltimore City, 2014).

g. Freight

Currently, cargo to/from specific railroad customers of the freight trains that pass through the B&P Tunnel include vegetable oil, plastic pellets, paper, lumber, and produce. However, there are no regulations or restrictions which would preclude other forms of freight cargo on these trains, providing the material is moved in accordance with federal transportation rules.

Norfolk Southern Corporation (NS) and CSX Corporation have rights to operate on the NEC per "trackage-rights agreements" that date back to Amtrak's acquisition of the NEC on April 1, 1976 as part of the Railroad Revitalization and Regulatory Reform Act of 1976. Per these agreements, Amtrak must make reasonable efforts to accommodate freight rail operations on the NEC, and freight rail companies must be equally accommodating in accepting off-hour track assignments for the movement of goods (nights and weekends), when passenger trains operate less frequently and the insertion of freight trains will not cause delay. While these agreements guarantee private rail freight companies access to the NEC, these rail freight companies have other route options around Baltimore that make the B&P Tunnel route less attractive as a major through route across or around the city.

Because of these alternate route options, there are currently no "through" freight trains operating through Baltimore on the NEC. For the past several years, only one local NS freight train has been operating through the B&P Tunnel daily, serving customers south of the B&P Tunnel between Baltimore and Washington, DC. The train originates at Bayview Yard in Eastern Baltimore (north of Baltimore Penn Station), travels through the Station and the Tunnel, and delivers and/or picks up cars at various sidings, and then returns to Bayview Yard.

NS has no plans to increase or change its B&P Tunnel freight operation in the near future. NS has, however, restated its contractual right to increase freight operations in the future should it see value in doing so. In addition, the agreements provide that Amtrak cannot take any action that may restrict future growth in freight traffic through the B&P Tunnel.

Amtrak's first priority is to its passenger services. Therefore, although Amtrak must accommodate requests from NS or other freight operators with trackage rights agreements for additional train moves on the NEC, Amtrak need only schedule such moves as space between passenger trains can be made available. Where the freight operator and Amtrak have a dispute about scheduling of freight moves, the Surface Transportation Board (STB) adjudicates trackage rights agreements.

6. Economy

a. Employment

The labor force includes the civilian and US Armed Forces population over 16 years of age working as paid employees, people who are self-employed (including farmers), or who worked 15 hours or more as unpaid workers for a family farm/business. Excluded from the labor force are those over 16 years of age who are students, homemakers, unpaid volunteers, retirees, institutionalized, or worked less than 15 hours a week as unpaid workers for a family farm/business.

The unemployed are defined as those over 16 years of age and not currently working, but actively looking for work and generally available to work. As shown in **Table V-7**, the unemployed population of the Study Area in 2013 was 20.4 percent, which was about 6.5 percent higher than Baltimore City and about 12.2 percent higher than the statewide rate (US Census Bureau, 2013a).

Table V-7: Labor Force Characteristics

Geographic Area	Population	
	Residents in Labor Force	Unemployed Residents in Labor Force (Percent)
Study Area	36,055	20.4
Maryland	3,214,633	8.2
Baltimore City	312,986	13.9

Source: US Census Bureau (US Census Bureau, 2013a).

The percent of residents employed in each occupation category of the ACS in 2013, detailed in **Appendix E,** is similar for the Study Area Block Groups, Baltimore City, and Maryland (see **Table V-8**). Most workers residing in the Study Area (about 33.2 percent) work in management, business, science, and arts. Approximately one quarter (25.1 percent) work in a service capacity, and 25.2 percent are sales and office staff. The remaining workers are in natural resources, construction, and maintenance sectors (4.4 percent), or are laborers in production, transportation, or material-moving jobs (12.0 percent).

The highest percent of Study Area workers in the management, business, science, and art professions (82.2 percent) reside in the Bolton Hill neighborhood (Block Group 1401.004). For the other analyzed occupation types in the Study Area, the majority (67.4 percent) work in sales and office occupations and reside in the Midtown-Edmondson neighborhood (Block group 1605.002). The majority of Study Area residents working in services (53.7 percent) reside in the Sandtown-Winchester neighborhood (Block Group 1501.003). The highest percentage of people whose occupations are in natural resources, construction, and maintenance (28.6 percent) reside in the Mondawmin neighborhood (Block Group 1504.001), and the highest proportion of working residents in production, transport, and material moving jobs (44.1. percent) reside in in the Penrose/Fayette neighborhood (Block Group 2002.002). Major employers in the Study Area include Bon Secours Hospital and the University of Baltimore (US Census Bureau, 2013e).

Table V-8: Summary of Resident Occupations

Geographic Area/Census Block Group	Management, Business, Science, and Arts (Percent)	Service (Percent)	Sales and Office (Percent)	Natural Resources, Construction, and Maintenance (Percent)	Production, Transportation, and Material-Moving (Percent)
Maryland	44.2	16.9	23.2	7.9	7.7
Baltimore City	38.4	21.6	23.5	6.1	10.5
Study Area Total Block Groups	33.2	25.1	25.2	54.4	12.0

Source: US Census Bureau (US Census Bureau, 2013a).

b. Business

The US Census Bureau's 2013 Annual Economic Survey provides certain business characteristics data by North American Industry Classification System (NAICS) code and ZIP code (US Census Bureau, 2013c), which is the smallest available analysis unit for businesses in the Study Area. The ZIP code boundaries encompassed in all or part of the Study Area include: 21201, 21202, 21216, 21217, 21223, and 21229 (**Figure V-7**).

Table V-9 shows a total of 4,185 businesses are located in the Study Area ZIP codes with the majority in the easternmost portion that extends south (21202), encompassing Baltimore Harbor (US Census Bureau, 2013c). The top five sectors in the Study Area ZIP codes are professional, scientific, and technical services (17.3 percent); retail trade (15.0 percent); accommodation and food services (13.0 percent); health care and social assistance (12.0 percent); and other services (11.1 percent). A total of 2,137 establishments (51.1 percent) have one to four employees with the largest 12 establishments having 1,000 or more employees (0.3 percent). In comparison, in 2013, Baltimore City had 12,280 establishments of which 386 had 100 or more employees (3.1 percent) and statewide 135,421 establishments had 3,375 had 100 or more employees (2.5 percent). (US Census Bureau, 2013f). In 2013, annual payroll was distributed in the following ZIP codes (US Census Bureau, 2013d):

- 21201: $2.2 billion
- 21202: $3.8 billion
- 21216: $0.3 billion
- 21217: $0.1 billion
- 21223: $0.2 billion
- 21229: $0.3 billion

Annual 2013 payroll in Baltimore City was approximately $16 billion (US Census Bureau, 2013c) and $108 billion statewide (US Census Bureau, 2013e).

The largest business in the immediate vicinity of the south portal, P. Flanigan & Sons (F&S) Inc., is located at 1300 North Monroe Street, intersecting ZIP codes 21216 and 21217 within the Study Area. It is the only Maryland State Highway Administration-approved recycled concrete aggregate base manufacturer in Maryland and has been in operation since 1885. It has an advantageous location for material transportation, which utilizes the CSX freight line spur to transport stockpiles of aggregate up to three times per week, and it is in close proximity to several major highways and facilities, including I-95, I-695, I-70, US Route 1, US Route 40, MD-295, the Port of Baltimore, and BWI Airport. This location employs approximately 50 people, some of whom reside in adjacent communities, making this business one of the economic drivers of the community.

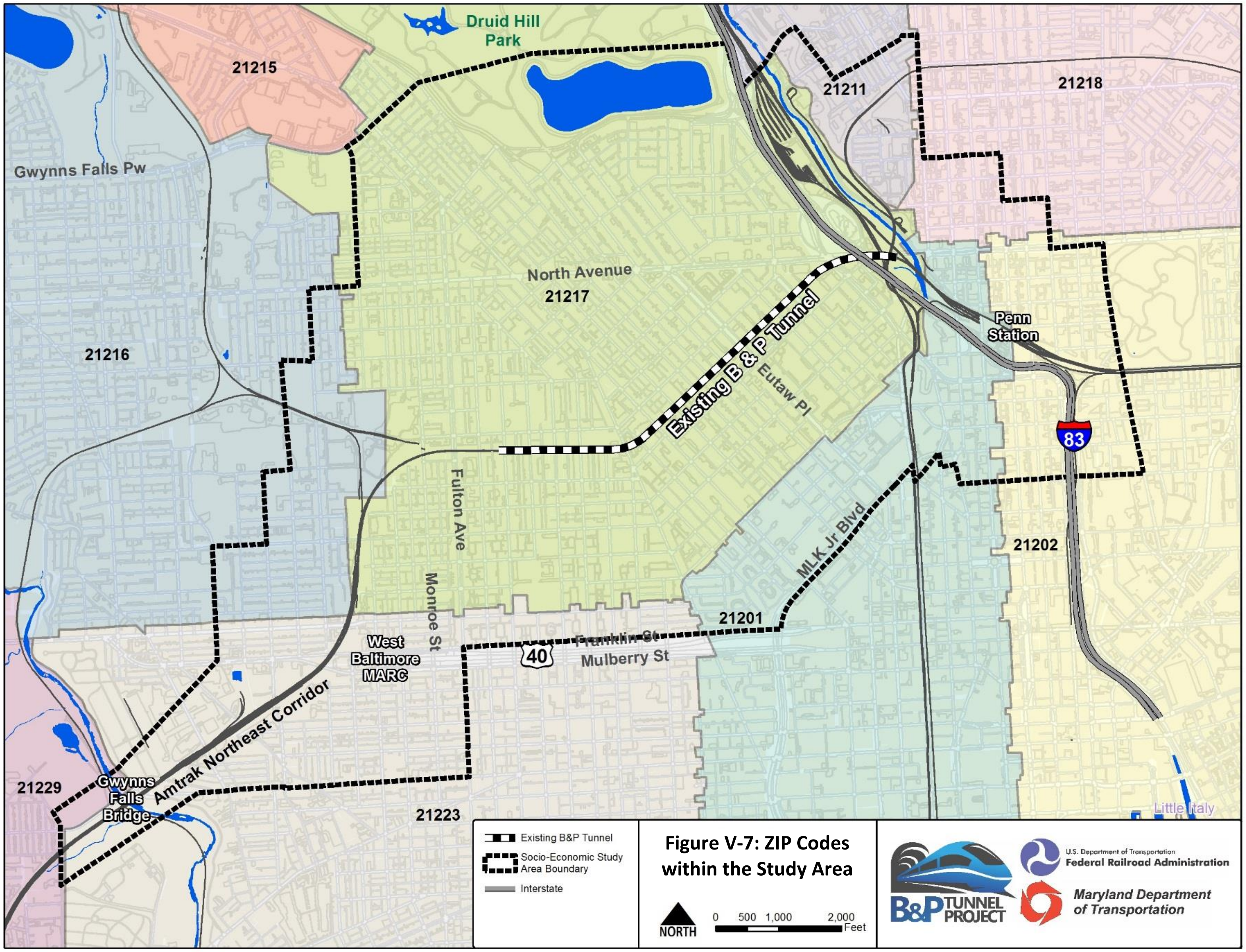


Figure V-7: ZIP Codes within the Study Area

Table V-9: Number of Business Establishments per NAICS Business Sector by ZIP Code

NAICS Business Sector[1]	ZIP Code						Total Number by Business Sector
	21201	21202	21216	21217	21223	21229	
Accommodation and Food Services	195	202	17	36	50	44	**544**
Administrative, Support, Waste Management, and Remediation Services	59	97	4	10	12	15	**197**
Arts, Entertainment, and Recreation	19	27	0	9	4	2	**61**
Construction	23	22	7	12	17	29	**110**
Educational Services	17	26	3	5	5	8	**64**
Finance and Insurance	86	166	4	6	7	13	**282**
Health Care and Social Assistance	146	117	53	57	29	101	**503**
Information	35	46	0	2	3	3	**89**
Management of Companies and Enterprises	17	19	0	0	0	0	**36**
Manufacturing	7	14	2	5	32	6	**66**
Other Services (Except Public Administration)	126	142	29	69	49	51	**466**
Professional, Scientific, and Technical Services	316	359	1	19	14	16	**725**
Real Estate and Rental and Leasing	59	78	10	23	29	13	**212**
Retail Trade	141	143	56	91	114	81	**626**
Transportation and Warehousing	8	12	10	5	11	10	**56**
Utilities	2	8	0	0	0	0	**10**
Wholesale Trade	25	44	4	8	32	22	**135**
Industries Not Classified	0	0	0	2	0	1	**3**
ZIP Code Total Number of Establishments	**1,281**	**1,522**	**200**	**359**	**408**	**415**	**4,185**

Source: US Census Bureau Economic Survey (US Census Bureau, 2012).

[1]North American Industry Classification System.

c. Property Taxes

Both Baltimore City and Maryland real property tax rates have remained constant since 2008, at $2.268 and $0.112 per $100 assessed value, respectively (Baltimore City, 2013). Based on parcel tax data, 2014 Baltimore City real property taxes in the Study Area totaled approximately $34.8 million, compared to $763 million levied citywide in 2013 (Baltimore City, 2013; Baltimore City, 2014). The State collected approximately $738 million in real property taxes in 2013 (Maryland State Archives, 2015).

d. Income and Wages

Table V-10 summarizes 2013 inflation-adjusted median household income of people residing in the Study Area, Baltimore City, and Maryland. The median household income of the 77 Study Area Blocks Groups ranged from $8,643 to $78,365. The average median household income of the Study Area Block Groups was $29,474 — approximately $12,000 (29 percent) less than that of Baltimore City and $44,000 (60 percent) less than the statewide average.

Table V-10: Median Household Income

Geographic Area	Median Household Income (US Dollars)[1]
Maryland	$73,538
Baltimore City	$41,385
Study Area	**$29,474**

Source: US Census Bureau (US Census Bureau, 2013a).
[1] 2013 inflation-adjusted dollars.

7. Neighborhoods and Community Facilities

Neighborhoods and facilities were identified based on site visits and a review of Geographic Information Systems (GIS) data. Thirty residential neighborhoods were identified within, and/or intersecting with, the Study Area.

Community facilities within the Study Area include educational, religious, law enforcement, fire and rescue, parks and recreation facilities, and cemeteries.

a. Neighborhoods

The Study Area neighborhoods (**Figure V-8, Table V-11**) are typical of older, established urban areas, with historic architecture, highly trafficked pedestrian spaces, busy thoroughfares, and quieter residential roads. The neighborhoods are primarily residential, composed mainly of single-family attached rowhomes and several garden apartment complexes. The Study Area features a variety of commercial and industrial businesses, such as convenience stores, bars/restaurants, clothing retail, and automotive care, located along the main thoroughfares of North Avenue and Pennsylvania Avenue. Residential and commercial areas alike are characterized by frequent pedestrian activity.

In some neighborhoods, the residential character/cohesion has been impacted by previous construction of substantial linear infrastructure. The existing B&P Tunnel rail alignment traverses from Gwynn's Falls as surface tracks (i.e., daylighted) through the Carroll-South Hilton, Penrose/Fayette Street Outreach, Rosemont Homeowners/Tenants, Evergreen Lawn, Midtown-Edmondson, and Bridgeview/Greenlawn neighborhoods. Since it was constructed in 1873, the railroad has been a physical barrier to the neighborhoods, except in nine locations where the railroad is subterranean, there is an overpass, or it is crossed by local roads. Land adjacent to the rail corridor is primarily commercial and industrial, which acts as a buffer between the railway and residential land uses.

The residential character of neighborhoods has also been impacted by wide multilane roads such as US 40, which bisects neighborhoods to the southwest of the Study Area; North Avenue, a major east-west thoroughfare in the north of the Study Area; Martin Luther King Junior Boulevard, which leads to I-95 and I-295 in the southeast of the Study Area; and I-83 to the east. The Jones Falls Area neighborhood is the least residential as it has heavy transportation land use where I-83, the MTA North Avenue Light Rail Yard, and Baltimore Penn Station are located. Neighborhoods in the Study Area east of the Jones Falls Area connect to the neighborhoods west or south via 11 overpasses at nearly all major intersecting streets, ensuring neighborhood access.

Table V-11: Neighborhoods within the Study Area

Neighborhood	Location within Study Area
Barclay	East
Bolton Hill	Central
Bridgeview/Greenlawn	West
Coppin Heights/Ash-Co-East	North
Druid Heights	North
Easterwood	West
Evergreen Lawn	Southwest
Franklin Square	South west
Greenmount West	East
Harlem Park	South
Heritage Crossing	South
Johnston Square	East
Madison Park	Central
Mid-Town Belvedere	East
Midtown-Edmondson	Southwest
Penrose/Fayette Street Outreach	Southwest
Rosemont Homeowners/Tenants	Southwest
Sandtown-Winchester	Central
Upton	Central
Carroll-South Hilton	Southwest
Shipley Hill	Southwest
Mondawmin	Northwest
Parkview/Woodbrook	Northwest
Penn North	North
Reservoir Hill	North
Jones Falls Area	Northeast
Charles North	Northeast
Charles Village	Northeast
Druid Hill Park Area	North
Remington	Northeast

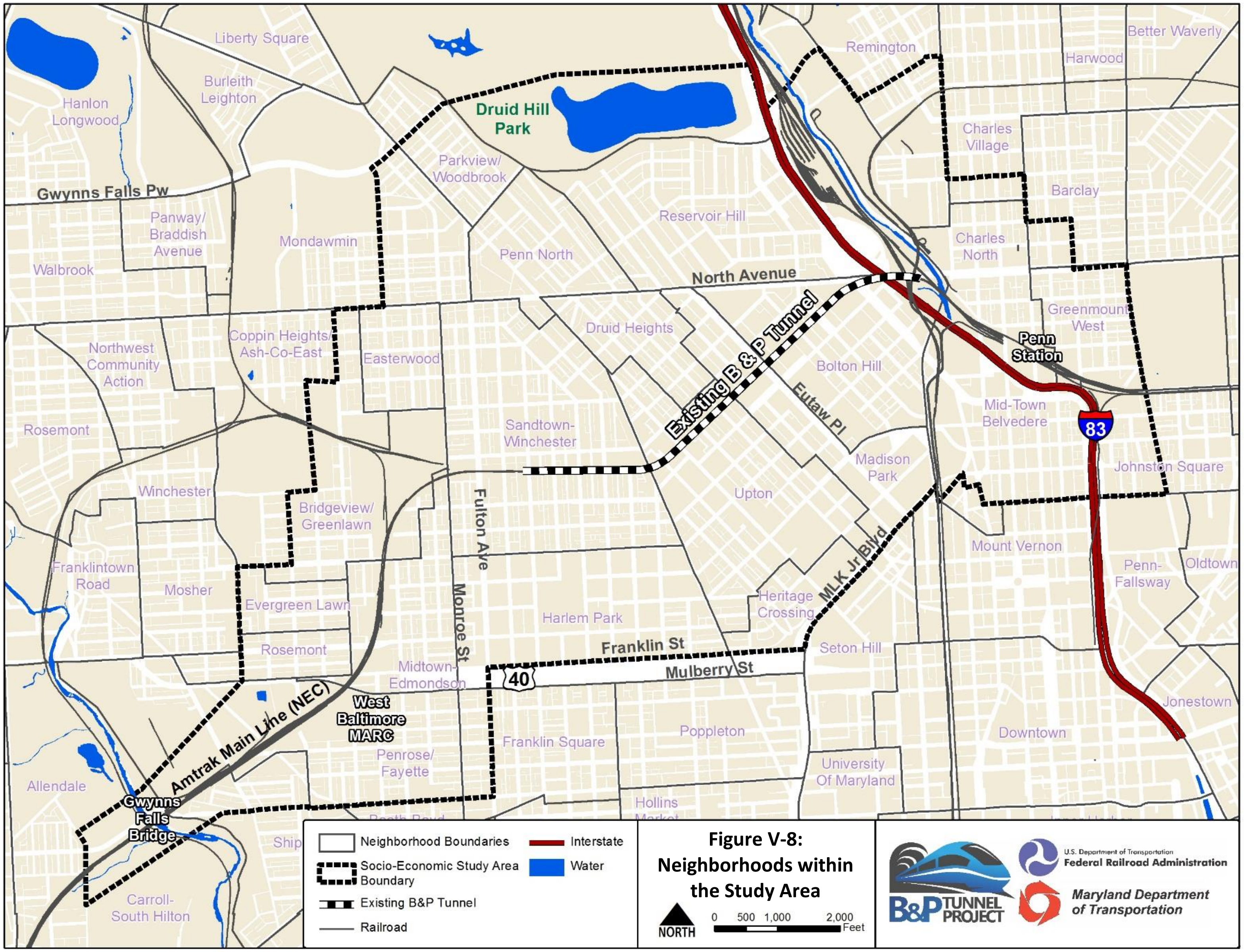


Figure V-8: Neighborhoods within the Study Area

b. Community Facilities

The Study Area contains a wide range of community facilities and public services that are locally oriented and serve the region, including places of worship, recreation centers, cemeteries, schools, libraries, parks, and a healthcare facility. **Figure V-9** shows the community facilities within the Study Area. These facilities are an integral part of the communities in which they serve, as resident participation contributes to community cohesion.

i. *Educational Facilities*

There are 26 educational institutions within the Study Area, including four elementary/middle schools, two middle schools, and three high schools. Carver Vocational Technical High School is the only vocational school within the Study Area. The University of Baltimore and Maryland Institute College of Art are higher-education institution in the Study Area (**Table V-12)**.

Table V-12: Schools within the Study Area

Name	Location
Eutaw-Mashburn Elementary School	1624 Eutaw Place
Westside Elementary School	2235 N Fulton Avenue
Matthew A. Henson Elementary School	1600 N Payson Street
Harlem Park Elementary/Middle School	1401 W Lafayette Street
Dallas F. Nicholas Sr. Elementary School	201 E 21st Street
John Eager Howard Elementary School	2011 Linden Avenue
Mount Royal Elementary Middle School	121 McMechen Street
Gilmor Elementary School	1311 N Gilmor Street
Samuel Coleridge-Taylor Elementary School	507 W Preston Street
Furman L. Templeton Elementary School	1200 N Pennsylvania Avenue
Booker T. Washington Middle School	1301 McCulloh Street
James Mosher Elementary School	2400 W Mosher Street
Mary Ann Winterling Elementary School	220 N Bentalou Street
Lockerman Bundy Elementary School	301 N Pulaski Street
Empowerment Academy Elementary/Middle School	851 Braddish Avenue
Midtown Academy	1398 Mount Royal Avenue
New Song Academy Elementary/Middle School	1530 Presstman Street
Baltimore Montessori Public Charter School	1600 Guilford Avenue
New Hope Academy middle/high school	900 Druid Hill Avenue
Augusta Fells Savage Institute of Visual Arts	1500 Harlem Avenue
Baltimore Talent Development High School	1500 Harlem Avenue
Baltimore Renaissance Academy HS	1301 McCulloh Street
Carver Vocational Technical High School	2201 Presstman Street
Monarch Academy Public Charter School	1200 North Freemont Avenue
University of Baltimore	1420 N. Charles Street
Maryland Institute College of Art	1300 W Mount Royal Avenue

Source: Baltimore City, 2010.

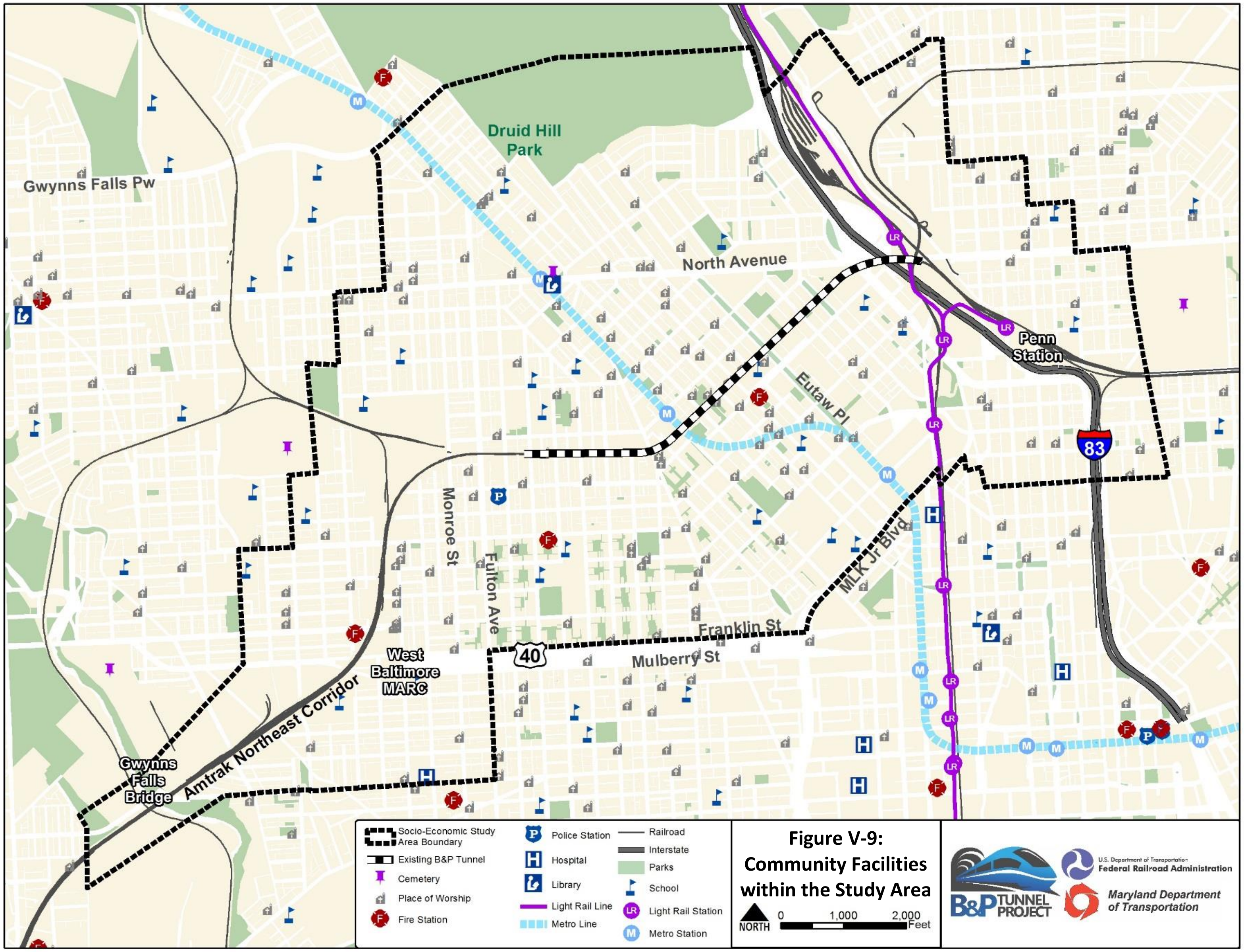


Figure V-9: Community Facilities within the Study Area

ii. *Places of Worship*

Thirty-seven places of worship are located within the Study Area and are listed in **Table V-13**.

Table V-13: Places of Worship within the Study Area

Name	Location
Perkins Square Baptist Church	2500 Edmondson Avenue
Faith Christian Worship Center	700 N Pulaski Street
Wayside Baptist Church	1318 Riggs Avenue
New Bethlehem Baptist Church	1370 N Carey Street
Transformation Baptist Church	815 N Mount Street
St Peter Claver Roman Catholic Church	1524 N Fremont Avenue
St Katherine’s Episcopal Church	2001 Division Street
The Old Time Way Church of Deliverance	2100 W Lanvale Street
Trinity Baptist Church	1601 Druid Hill Avenue
Sanctuary Church	800 N Fulton Avenue
McKinney Memorial Holy Church	1334 N Calhoun Street
Holy Temple Pentecostal Church	574 Presstman Street
Refuge Church of Deliverance	2101 Edmondson Avenue
Berea Seventh Day Adventist Church	1901 Madison Avenue
World Deliverance Church	1700 McCulloh Street
Central Congregation of Jehovah's Witnesses	1107 N Fremont Avenue
Church of Christ	664 Pitcher Street
New Porters Tabernacle Church	2105 Edmondson Avenue
Bethel United Apostolic Church	631 Whitelock Street
All New Satellite Baptist Church	101 N Warwick Avenue
New Metropolitan Baptist Church	1501 McCulloh Street
Freedom Church & Ministries	813 N Pulaski Street
St Luke’s United Methodist Church	1100 N Gilmor Street
All Saints Baptist Church	1300 N Mount Street
Payne African Methodist Episcopal Church	1714 Madison Avenue
St Matthew Lutheran Church	1909 Druid Hill Avenue
Triumph Church of God	1501 Myrtle Avenue
Open Door Baptist Church	1700 Madison Avenue
New Life Fellowship Church of Christ	559 Robert Street
First Emmanuel Baptist Church	2203 Park Avenue
Beth Am Congregation	2501 Eutaw Place
Strawbridge United Methodist Church	1624 Eutaw Place
Masjid ul-Haqq	514 Islamic Way
New Mount Joy Missionary Baptist Church	1725 Division Street
Life Celebration Center Church	2100 Edmondson Avenue
Christ Apostolic Church	2206 Park Avenue
Tabernacle of God Church Outreach	1520 Winchester Street

Source: United States Geological Survey Geographic Names Information System, 2012/RKK.

iii. *Law Enforcement Facilities*

The Study Area is served by the North, Central, East, West, and Southwest police districts of Baltimore City. There is one police station located at 1034 North Mount Street, in the West District.

iv. *Fire and Rescue Facilities*

The Baltimore City Fire Department provides fire protection and emergency medical services to Baltimore City. The Study Area is served by the second and third Battalions of the Baltimore City Fire Department, which contain three fire stations (see **Table V-14**).

Table V-14: Fire and Rescue Facilities within the Study Area

Name	Location
Second Battalion Smokestack Hardy Fire Station Engine Company 13, Truck Company 16, Medic 4	405 McMechen Street
Third Battalion Charles R. Thomas Fire Station Engine Company 36	2249 Edmondson Avenue
Third Battalion Engine Company 8, Truck Company 10, Medic 15	1503 W Lafayette Avenue

Source: Baltimore City (2010).

v. *Parks and Recreational Facilities*

There are 103 parks in the Study Area, including city parks, neighborhood parks, and community pocket parks. Park services are provided by the Baltimore City Department of Recreation and Parks. Druid Hill Park, in the northeast Study Area, is the largest park within the Study Area, encompassing approximately 615 acres. Small neighborhood and community pocket parks are prevalent throughout the Study Area.

Two parcels not occupied by buildings are located at the intersection of Whitelock Street and Brookfield Avenue. These parcels are owned by Baltimore City Mayor and City Council and are managed by the Reservoir Hill Association through the Adopt-A-Lot Program. Per the Baltimore City Department of Housing and Community Development, and confirmed through discussions with neighborhood residents at various B&P Tunnel Project Community Meetings, a community garden (Whitelock Farm) is maintained and utilized by residents at these parcels, with additional potential uses for the parcels proposed by the community. The community garden and existing use of these parcels as community gathering spaces are considered integral to the neighborhood character of Reservoir Hill by its residents.

Baltimore City Department of Recreation and Parks manages 41 recreation centers throughout Baltimore City, seven of which are located within the Study Area (see **Table V-15**). These centers offer programs for children and adults, including cooking classes, arts and crafts, as well as gym activities.

Table V-15: Public Recreation Centers within the Study Area

Name	Location
Bentalou Recreation Center	222 N Bentalou Street
John Eager Howard Recreation Center	2100 Brookfield Avenue
Lillian S. Jones Recreation Center	1310 N Stricker Street
Mount Royal Recreation Center	120 W Mosher Street
Parkview Recreation Center	2610 Francis Street
Robert C. Marshall Recreation Center	1201 Pennsylvania Avenue
Upton Boxing Center	1901 Pennsylvania Avenue

Source: Baltimore City Department of Recreation and Parks.

There are three public swimming facilities in the Study Area: one park pool, located in Druid Hill Park; and one neighborhood pool and wading pool, both located in the Sandtown-Winchester neighborhood (see **Table V-16**).

Table V-16: Public Pools within the Study Area

Swimming Facility	Name	Location
Park Pool	Druid Hill Park	800 Wyman Park Drive
Walk-to Pool	William McAbee	1323 N Gilmor Street
Wading Pool	Lillian S. Jones Recreation Center	1310 N Stricker Street

Source: Baltimore City Department of Recreation and Parks.

vi. *Cemeteries*

The Etting Family Cemetery at 1510 West North Avenue is the only cemetery located in the Study Area. It is the oldest Jewish cemetery in Baltimore.

8. Visual and Aesthetic Resources

FRA Procedures for Considering Environmental Impacts (FRA, 1999) and guidance from the Federal Highway Administration (FHWA) Visual Impact Assessment for Highway Projects (FHWA, 1981) were used to identify visual and aesthetic quality within the Study Area. The discussion of visual and aesthetic resources in this chapter focuses on existing conditions in the Study Area. For more information regarding methodology, please see **Chapter VI, Section A**.

The Study Area includes four viewsheds along the general Project corridor. The existing B&P Tunnel is present in several portions of the existing viewsheds. These viewsheds are:

1) the location proposed for the north portal and North Ventilation Facility in the east Jones Falls area;

2) the location proposed for the Intermediate Ventilation Facility in the Reservoir Hill neighborhood;

3) the location proposed for the south portal and South Ventilation Facility in the Bridgeview/Greenlawn and Midtown-Edmondson neighborhoods; and

4) the transportation right-of-way surrounding the trackway located railroad south of the proposed south portal location.

The viewshed at the location proposed for the north portal and North Ventilation Facility is in the east Jones Falls area. The landscape is characterized by transportation uses, including trackway, a warehouse facility, and a storage yard, as it is the site of the MTA Light Rail Maintenance Facility and North Avenue Light Rail Station. The Jones Falls Expressway (I-83) and North Avenue also cross the site. The landscape features trackway from the existing B&P Tunnel, a warehouse facility, a storage yard, parking lots, and roadway overpasses. The primary viewer group is transitory, and includes people who only travel through the Project area to another location.

The preferred Intermediate Ventilation Facility site would be in the Reservoir Hill neighborhood along North Avenue. The 900-940 West North Avenue site contains seven businesses including retail, office, and health care services. The Madison Park North Housing Complex is located to its immediate east, which is currently vacant. The Intermediate Ventilation Facility would be in an urban commercial area, adjacent to North Avenue, a major thoroughfare in Baltimore City. The landscape is characterized by multi-family housing, commercial storefronts, and institutional buildings. The primary viewer groups are permanent, including residents and nearby business employees, as well as transitory, and includes people who only travel through the Project area to other locations.

The viewshed at the location proposed for the south portal and south portal ventilation facility is in the Bridgeview/Greenlawn, Midtown-Edmondson, and Rosemont neighborhoods. These areas are established urban neighborhoods surrounding main roadway thoroughfares such as West Lafayette Avenue, Edmondson

Avenue, and West Franklin Street/West Mulberry Street. The landscape is characterized by a mix of historic residential rowhouses, commercial storefronts, institutional buildings, industrial buildings, and transportation uses such as roadways, bridges, and the existing B&P Tunnel trackway. The primary viewer group is permanent and limited exposure, including residents and nearby business employees.

The viewshed for the transportation right-of-way surrounding the trackway located railroad south of the proposed south portal location includes the transportation uses such as roadways, bridges, and the existing B&P Tunnel trackway. The primary viewer group is transitory, and includes people who only travel through the Project area to another location.

B. Public Health and Safety

This section provides a brief discussion of resources within the Study Area that contribute to public health and that may be affected by the Preferred Alternative, Alternative 3A, and Alternative 3C. Resources that contribute to public health for the B&P Tunnel Project include air quality, noise, hazardous material, and safety (disposition of the existing B&P Tunnel).

1. Air Quality

Air quality is important to human health. Research has linked air pollutants such as ozone and particulate matter (PM) to lung disease, heart disease, and other health problems. As described in **Section V.H**, Air Quality, the Study Area is presently designated by the EPA as a moderate nonattainment area for the eight-hour ozone and a maintenance area for $PM_{2.5.}$ Although a portion of Baltimore City is designated as a maintenance area for CO, the B&P Tunnel project is located outside of the maintenance area.

2. Noise

Health impacts associated with noise include sleep disturbances, annoyance responses, and adverse social behavior. The methodology for assessing existing noise conditions is described in detail in **Section I.** Noise measurements in the Study Area included rail traffic and motor vehicle traffic along surface streets. Measured peak-hour noise levels near the south portal ranged from 64.3 dBA to 70.3 dBA and the day-night noise levels range from 63.2 dBA to 64.7 dBA. Noise levels near the north portal are 60.0 dBA for both the peak-hour and day-night noise levels.

3. Hazardous Materials

Hazardous material and waste have the potential to threaten human health or the environment through exposure to toxic chemicals, carcinogenic components, or other harmful materials. A Preliminary Screening Assessment (PSA) to identify potential sites of environmental concern was conducted throughout the Study Area. The Study Area has a history of industrial activity, including dry-cleaning, rail maintenance, gas stations, and automotive repair. Current and historical hazardous materials used within the Study Area include, but are not limited to, petroleum, solvents, and other industrial contaminants. Please see **Section F** for more information regarding hazardous materials.

4. Safety

For this assessment, safety is related to the disposition of the existing B&P Tunnel and materials transported through the proposed new tunnel by freight rail. Despite the existing B&P Tunnel being more than 140 years old and approaching the end of its useful life due to structural deficiencies and obsolescence, the tunnel remains safe for rail transportation. In addition, Amtrak operates on the B&P Tunnel in accordance with proven safety approaches, performance-based safety measures, and adherence to best practices.

The existing B&P Tunnel predates certain standards and therefore lacks the comprehensive life safety approach contained in the National Fire Protection Association's (NFPA) Standard for Fixed Guideway Transit and Passenger Rail Systems—NFPA 130. This standard was developed and is maintained by a committee of industry professionals, regulators, and subject matter experts. The committee's primary responsibility is to set the standard for fire safety requirements in underground, surface, and elevated fixed guideway transit and passenger rail systems, including stations and tunnels. The standard prescriptively outlines the requirements for emergency ventilation systems, emergency procedures, communication and control systems, and for life safety from fire through infrastructure design and fire protection system attributes.

The railroads that use the B&P Tunnel have a Common Carrier Obligation, which prohibits them from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous materials can be transported along the Northeast Corridor and through the B&P Tunnel, but are subject to regulations from the US Department of Transportation. FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information, and safety and security plans. In addition, local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel.

Currently, Norfolk Southern (NS) operates the only freight trains that run through the existing B&P Tunnel. One train runs through the tunnel twice daily (once in each direction), and does not operate during the four-hour peak evening period. Cargos of the freight train that passes through the B&P Tunnel includes vegetable oil; plastic pellets; paper; lumber; and produce. Although not currently transported over the Northeast Corridor through Baltimore, hazardous and flammable/explosive materials and wastes can be transported by train along the Northeast Corridor and through the B&P Tunnel; there are no regulations or restrictions which preclude other forms of freight cargo on these trains, providing the material is moved in accordance with federal transportation regulations.

5. Children's Health

US Environmental Protection Agency Executive Order 13045 – *Protection of Children from Environmental Health Risks and Safety Risks* applies to economically-significant rules under EO 12866 that concern an environmental health or safety risk that may disproportionately affect children. Environmental health risks or safety risks refer to risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we are exposed to). According to EPA research, children may suffer disproportionately from environmental health and safety risks because children generally eat more food, drink more water, and breathe more air relative to their size than adults. Contaminants may affect children disproportionately because their immune system defenses are not fully developed. (US Environmental Protection Agency, 2006). Children may be more or less sensitive than adults when confronted with an equivalent level of exposure to an environmental pollutant. This section assesses the existing environment which could have potential impacts to children's health.

a. Air Quality

The regulatory framework in which air quality is measured is described in detail in **Section H**. The Clean Air Act (CAA) requires EPA to set National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) for pollutants considered harmful to public health and the environment. The CAA identifies Primary Standards to provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Air quality is important to children's health as pollution can retard lung growth and exacerbate respiratory diseases. The most likely locations of potential effects on children, other than in residential areas, would be at schools where there are outdoor activities for children.

There are 26 educational facilities located within the Study Area. Twelve (12) are elementary schools and four are elementary/middle schools, included in **Table V-12**. As mentioned above, the Study Area is presently designated by the EPA as a moderate nonattainment area for the eight-hour ozone, and a maintenance area for CO and $PM_{2.5.}$

b. Water

Infants' immune systems are not as strong as those of healthy adults, so they are less able to fight off emerging microbial threats in drinking water. As described in **Chapter VI, Section E**, a sole source aquifer (SSA) is the primary source of drinking water for an area. No SSA, water supply reservoirs, wells, or recreational waters are located near the existing B&P Tunnel.

c. Soils and Hazardous Material

Several factors may cause children to suffer disproportionately from exposure to soils and hazardous material: children's behavior can expose them to more chemicals and organisms; children's skin and other body tissues may absorb some harmful substances more easily; and children's bodies are not yet fully developed. As a result, exposure to toxic substances may affect their growth and development.

The methodology used to assess hazardous material in the Study Area has been described above under **Public Health and Safety**.

C. Cultural Resources

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) (54 U.S.C. 306108), and the Advisory Council on Historic Preservation's (ACHP) implementing regulations (36 CFR Part 800), FRA has taken into account the effects of the Project on historic properties (36 CFR Part 800.1(a)). A historic property, is defined in the NHPA as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places (NRHP)." Eligibility criteria for listing a property in the NRHP are found in 36 CFR Part 60, and are defined as "the quality of significance in American history, architecture, archeology, engineering, and culture [that] is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
b) that are associated with the lives of significant persons in our past; or
c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
d) that have yielded, or may be likely to yield, information important in prehistory or history."

If a property is determined to possess historic significance, its integrity is evaluated by applying the Seven Aspects of Integrity to determine the property's ability to convey its significance. These include: Location, Design, Setting, Materials, Workmanship, Feeling, and Association.

Historic architectural and archaeological research material from the Maryland Historical Trust (MHT) Library, the MHT GIS database, the Maryland Environmental Resources and Land Information Network (MERLIN), and Medusa were used to ascertain previously-identified historic properties and archaeological sites, and gather cultural resources reports from the Study Area (36 CFR Part 800.4(a)(2)). Additional information on historic properties was identified through the Section 106 process, including input from consulting parties, the public, and field investigations (36 CFR Part 800.4(a)(3)).

1. Area of Potential Effects

The Area of Potential Effects (APE) is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties" (36 CFR Part 800.16(d)). Indirect effects could be caused by visual, atmospheric, and audible elements of the undertaking. The historic architectural APE was determined and documented (36 CFR Part 800.4(a)(1)) using information gathered from field visits, and from studying historic and current maps and aerial imagery. See **Figure V-18** for a map of the historic architectural APE. Since most construction activities along the proposed tunnel route build alternatives would be well beneath the surface, with little to no potential for effects to historic properties, these areas were not included within the APE. The historic architectural APE was delineated as a 200-foot radius around the outer boundaries of the north and south portal areas. Some of the south portal limits of disturbance are within the right-of-way of existing roadways, and in some cases, this work is associated with bridges. Due to the temporary nature of the roadway right-of-way work, the APE is defined as a 100-foot radius from the limits of disturbance in these areas. The exceptions to these APE limits are at the ends of the portal areas where the undertaking is confined to track work within the existing railroad right-of-way. The initial 100-foot radius APE around the Intermediate Ventilation Facility's potential location was extended to a 200-foot radius once specific potential sites were selected. The archaeological APE has not been formally delineated, but is assumed to be confined to the physical Project limits of disturbance.

2. Historic Architecture

FRA has identified architectural historic properties within the APE (36 CFR Part 800.4(b)) for the Preferred Alternative, Alternative 3A, and Alternative 3C. In total, there are 19 architectural historic properties within the APE that are either listed in or eligible for listing in the NRHP. These properties are listed in **Table V-17** and depicted in **Figure V-18**, and include industrial and residential buildings, bridges, and districts. For more information on the eligibility of each historic property, see the *Architectural Historic Properties Survey* technical report, and the 13 additional MHT Determination of Eligibility (DOE) Forms subsequently completed. FRA also prepared a technical memorandum in July 2016 containing updates to the identified list of historic properties. The document includes a clarification to the B&P Railroad historic district boundary. Two additional resources, the Union Railroad and Bolton Hill Historic District, have been added to the list of architectural historic properties following the publication of the DEIS. The Carver Vocational-Technical High School and Western Maryland Railroad, Owings Mills Division are not located within the APE for the Preferred Alternative.

Table V-17: Architectural Historic Properties within the APE

#	Historic Property	MIHP Identification Number
1	Baltimore and Ohio Railroad Baltimore Belt Line	B-5287
2	Baltimore and Ohio Railroad Baltimore Belt Line Bridge over Jones Falls Valley	B-5288
3	Baltimore & Potomac Railroad (Philadelphia, Baltimore and Washington Railroad)	B-5164
4	Union Railroad	B-5163
5	Howard Street Bridge (BC1405)	B-4529
6	North Avenue Bridge (BC 1208)	B-4521
7	Reservoir Hill Historic District	B-1379
8	Carver Vocational-Technical High School	B-5294
9	Western Maryland Railroad, Owings Mills Division	B-5293
10	Bolton Hill Historic District	B-64
11	Midtown-Edmondson Historic District	(none)
12	Bridge BC 2410 (Lafayette Avenue over Amtrak)	B-4553
13	Atlas Safe Deposit and Storage Company Warehouse Complex	B-5188-2

#	Historic Property	MIHP Identification Number
14	American Ice Company	B-1040
15	Greater Rosemont Historic District	B-5112
16	Edmondson Avenue Historic District	B-5187
17	Ward Baking Company	B-5112-2
18	Fire Department Engine House No. 36	B-5112-4
19	Pennsylvania Railroad Viaduct	B-5064

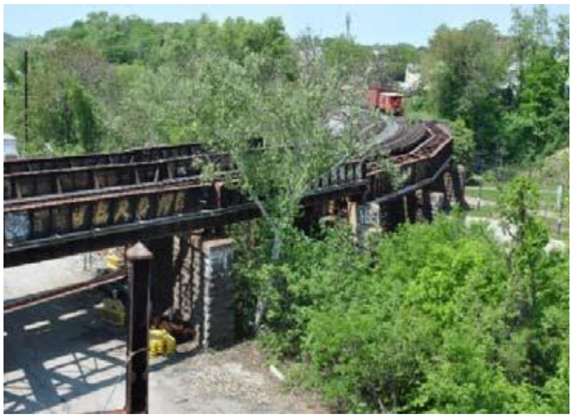
1) Baltimore and Ohio Railroad Baltimore Belt Line (MIHP #B-5287)

This 7.2-mile, double-tracked freight line was constructed between 1891 and 1895 to connect the Baltimore and Ohio's (B&O's) main line terminus at Camden Station in downtown Baltimore to Bay View Junction. This property is eligible for the NRHP under Criterion A for its association with the transportation industry. Specifically, it is nationally significant as the first electric railway in the United States and for its role in providing the B&O Railroad with an all-rail route from Washington, DC to Philadelphia, thereby allowing it to more effectively compete with the Pennsylvania Railroad. It is also eligible under Criterion C because it embodies distinctive characteristics of a late nineteenth- to early twentieth-century railroad, including resources that are individually notable for their architecture and/or engineering, and for its association with noted architect E. Francis Baldwin. The estimated period of significance is from 1891 to circa 1950.

2) Baltimore and Ohio Railroad Baltimore Belt Line Bridge over Jones Falls Valley (MIHP #B-5288)

The B&O Railroad Baltimore Belt Line Bridge over Jones Falls Valley is a six-span, through-plate and deck-plate girder bridge constructed between 1896 and 1899 to carry the B&O Railroad Baltimore Belt Line over the Jones Falls Valley (**Figure V-10**). It is located immediately north of the North Avenue bridge over the Jones Falls Valley. The bridge is eligible for the NRHP under Criterion A for its association with the transportation industry. It is eligible under Criterion C because it embodies distinctive characteristics of a late nineteenth-century, steel-plate girder railroad bridge.

Figure V-10: Baltimore and Ohio Railroad Baltimore Belt Line Bridge over Jones Falls Valley



3) Baltimore and Potomac Railroad (Philadelphia, Baltimore and Washington Railroad) (MIHP #B-5164)

The B&P Railroad, completed in 1873, extends from the Baltimore City/County Line to Baltimore Penn Station. It includes the three-part brick and stone B&P Tunnel, bridges, a circa 1910 brick railroad station on Edmondson Avenue, a brick tower at Gwynn Junction, and circa 1935 overhead catenary lines. The bridges over the alignment include the NRHP-eligible Vincent Street Bridge and Fulton Avenue over Amtrak Bridge, both built in 1873 along with the B&P Railroad and tunnel segments. The railroad is eligible for the NRHP under Criterion A as a critical component of the B&P Railroad alignment that established a reliable connection between Baltimore and Washington, DC, and ultimately to Philadelphia and New York, for the Pennsylvania Railroad. It is also eligible under Criterion C for being distinctive enough to be considered a true representative of railroad construction. In particular, the three-part 1873 tunnel is a significant product of engineering; it is 7,499-foot long, extending from west Baltimore to Pennsylvania Station. The period of significance is from 1872 to 1976.

4) Union Railroad (MIHP #B-5163)

Completed in 1873, the Union Railroad's current boundary extends from the B&P Railroad Tunnel portal at the North Avenue bridge to Boston Street in the Canton section of Baltimore City. This includes a short segment of the former Northern Central Railroad between North Avenue and Guilford Avenue. Contributing elements include Pennsylvania Station (B-3727), Union Tunnel, tracks, the roadbed, buildings, retaining walls, interlocking towers, signs, the catenary system, and the 1930s signal system. The railroad is eligible for the NRHP under Criterion A in the areas of transportation, industry, commerce, and community planning and development for its contribution to the development of industry and commerce in Baltimore. The railroad is also a catalyst for increased settlement, and has a role in connecting the B&P Railroad with the Philadelphia, Wilmington & Baltimore Railroad, providing a continuous all-rail line between Philadelphia and Washington DC. The railroad is also eligible under Criterion C for its engineering merit and as a significant and distinguishable entity. The estimated period of significance is from 1873 to 1960.

5) Howard Street Bridge (BC1405) (MIHP #B-4529)

The Howard Street Bridge was completed in 1938 and carries Howard Street over I-83, Amtrak, and Jones Falls. The bridge is a double-steel arch, seven-span structure that is 979 feet long. Built in 1938 and rehabilitated in 1981, it carries Howard Street over I-83, Amtrak, and Jones Falls. It is assumed this bridge may have significance under Criterion A, but this needs to be further studied. The bridge is eligible under Criterion C because it is a significant example of a metal arch bridge. There are only two metal arch bridges in Baltimore, namely this bridge and the Guilford Avenue Bridge. The latter has been significantly altered, eliminating one of its original arches, while the Howard Street Bridge retains its original two arches. Few metal arch bridges remain in Maryland. The bridge also appears to be a significant example of the work of the J. E. Greiner Company.

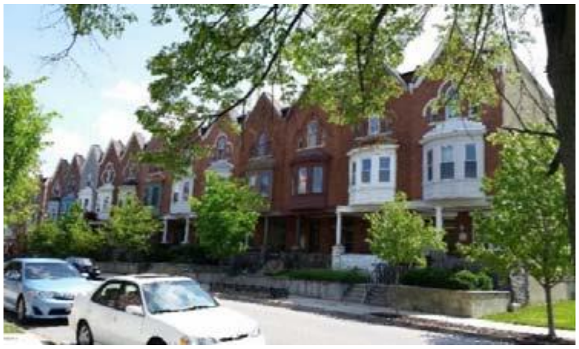
6) North Avenue Bridge (BC1208) (MIHP #B-4521)

The North Avenue Bridge is a seven-span stone/brick arch structure that is 888 feet in length. Built between 1891 and 1896, it carries North Avenue over Amtrak, CSX Railroad, Light Rail, and Falls Road. The deck was altered in 1976-1977. The bridge is eligible under Criterion A because construction of this bridge facilitated use of a number of railroad lines, which were instrumental in connecting Baltimore with Washington, Philadelphia, and New York. Additionally, the bridge promoted growth along the North Avenue corridor and encouraged transportation within the City of Baltimore as a whole. Criterion C for being a uniquely significant example of a multiple-span stone arch bridge. It is an unusual engineering solution to spanning a wide valley and transportation corridors.

7) Reservoir Hill Historic District (MIHP #B-1379)

The Reservoir Hill Historic District contains 32 blocks of mostly late nineteenth- to early twentieth-century rowhouses (**Figure V-11**). It is bounded by North Avenue, Mount Royal Avenue, Druid Park Lake Drive, and Madison Avenue. Mansions, apartment buildings, religious buildings, and commercial buildings are also located in the district. Reservoir Hill is listed on the NRHP under Criterion A for its association with the development of the City's Jewish community in the early twentieth century. It is also listed under Criterion C for being an architecturally significant example of a type of urban development which characterized Baltimore throughout the nineteenth and early twentieth century. Its period of significance is from 1790 to 1941.

Figure V-11: Reservoir Hill Historic District



8) Carver Vocational-Technical High School (MIHP #B-5294)

This African-American vocational and technical school campus was constructed between 1953 and 1955 and is located on a 13-acre site. Consisting of a main school building and athletic field, the property is eligible for the NRHP under Criterion A because it is significant in the areas of education, ethnic heritage (Black), and social history for being the culmination of the work of Baltimore local civil rights organizations and others to bring equal vocational education to African-American students in racially segregated Baltimore City. The property is also eligible under Criterion C for embodying the distinctive form, method of construction, and appearance of a mid-twentieth century vocational school building in the International Style with elements of Stripped Classicism.

9) Western Maryland Railroad, Owings Mills Division (MIHP #B-5293)

This is a former passenger and freight line constructed in 1873 to provide an independent line for the Western Maryland Railroad main line into the heart of Baltimore City. The evaluated alignment includes five steel and concrete under-grade bridges, five at-grade road crossings, one building, one structure, and associated cuts and fills. It is currently operated by CSX Railroad. The linear resource is eligible for the NRHP under Criterion A in the area of transportation as the final link in the railroad’s larger push to build an independent line into the City of Baltimore, allowing it to compete effectively with rival railroads, contribute to the wider economic growth and development of the city, and achieve the original intent of the largely city-sponsored civic engineering project. The railroad is also eligible under Criterion C in the area of engineering for its intact fills, cuts, and collection of twentieth century under-grade railroad bridges, and as a significant and distinguishable entity whose components lack individual distinction. The period of significance is from 1873 to 1960.

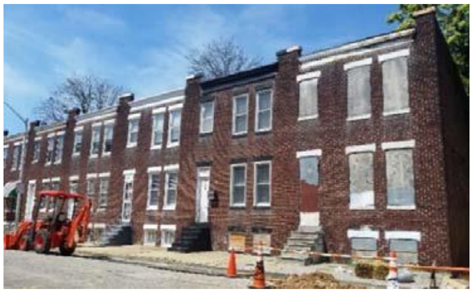
10) Bolton Hill Historic District (MIHP #B-64)

The Bolton Hill Historic District extends southwest of Mt. Royal Avenue, south of North Avenue, northeast of Madison Avenue, north of Dolphin Street, and west of Cathedral Street. The district consists of twenty blocks of residential buildings, primarily dating to the second half of the nineteenth century, but also into the early part of the twentieth century. The district is listed under Criterion A for developing as part of the ever continuing northward movement of Baltimore's residential neighborhoods, gaining full momentum during the second half of the nineteenth century, made easier by the proximity of railroad and street car lines. The district is listed for Criterion C as a residential neighborhood giving modern Baltimore an image of its nineteenth century heritage. The district is characterized by continuous blocks of row houses, similar and dignified; tree shaded streets; and handsome squares featuring sculptural monuments. The estimated period of significance is from 1850 to pre-World War I.

11) Midtown-Edmondson Historic District

The Midtown-Edmondson Historic District is roughly bounded by Kirby Lane on the east, West Franklin Street on the south, an irregular line west of the Amtrak NEC and Winchester Street to the north. The district is characterized as a mixed-use area of rowhouses, warehouses, and commercial buildings primarily constructed between the 1880s and 1910s (**Figure V-12**). The district is eligible for the NRHP under Criterion A for its association with the growth of West Baltimore and for its association with the post-World War II racial transition of West Baltimore from European American to predominantly African American by the 1950s. It is also eligible under Criterion C for being an example of a late nineteenth-century and early twentieth-century suburb with a diverse range of rowhouse designs. The period of significance is from 1888 to 1965.

Figure V-12: Midtown-Edmondson Historic District



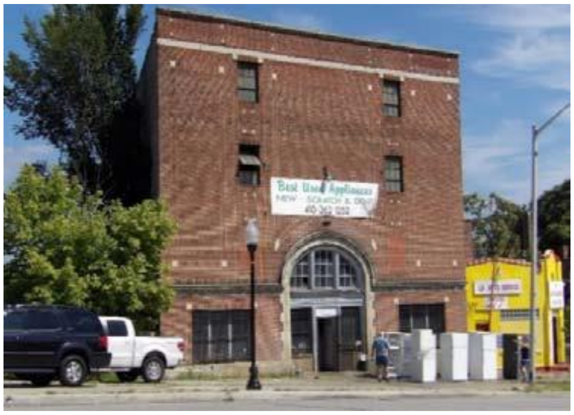
12) Bridge BC 2410 (Lafayette Avenue over Amtrak) (MIHP #B-4553)

Bridge 2410 (Lafayette Avenue over Amtrak) is a fourteen-span plate-girder bridge with a rolled I-beam deck structure built in 1931. It is 640 feet-long and carries Lafayette Avenue over Amtrak's NEC. This bridge is eligible for the NRHP under Criterion C for being a significant variation of a common bridge construction type. Steel girder bridges were built prolifically across Maryland from the late nineteenth century to the present day. There is often little variation in many of these bridges, and this bridge shows a unique juxtaposition of old and new elements. These differences set this structure apart from other bridges of this type.

13) Atlas Safe Deposit and Storage Company Warehouse Complex (MIHP #B-5188-2)

The Atlas Safe Deposit and Storage Company Warehouse Complex is a three-building complex located at 2126 Edmondson Avenue and adjoining the Amtrak NEC (**Figure V-13**). The buildings were constructed in 1925, 1946, and 1948, respectively. The property is eligible for NRHP listing under Criterion A in the area of industry as a well-preserved example of a storage warehouse associated with the railroad. It is also eligible under Criterion C in the area of architecture as an excellent example of an early-twentieth century warehouse complex built in direct association with and response to the railroad using specialized industrial building techniques of fireproof reinforced concrete columns and beamless slab floor construction.

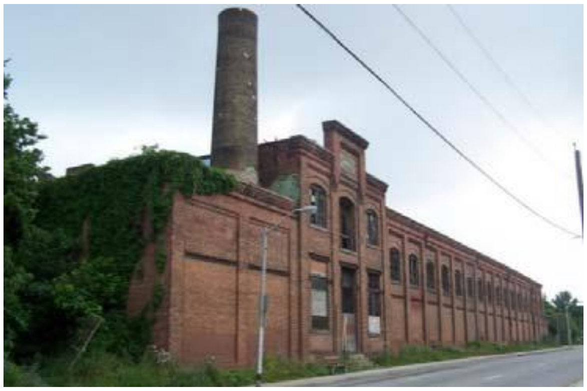
Figure V-13: Atlas Safe Deposit and Storage Company Warehouse Complex



14) American Ice Company (MIHP #B-1040)

The American Ice Company building is located at 2100 West Franklin Street and adjacent to Amtrak's NEC. It is a two-story brick building built in 1911, with a boiler room and engine room on the west side of the building, and a long, narrow extension attached to the powerhouse at the east end that was the tank house (**Figure V-14**). Additions from the 1950s and 1970s were destroyed by a 2004 fire. The building alone is listed on the NRHP under Criterion A for its role in the history of the ice industry in Baltimore. The plant successfully served the growing community of residents and businesses in Baltimore, and used the adjoining railroad line to transport ice to cities that included New York and Washington, DC. It is also listed under Criterion C as an intact example of a purpose-built ice-manufacturing plant. The rhythmic façade, arched window openings, and use of decorative brickwork are all characteristic of industrial architecture from the early twentieth century.

Figure V-14: American Ice Company



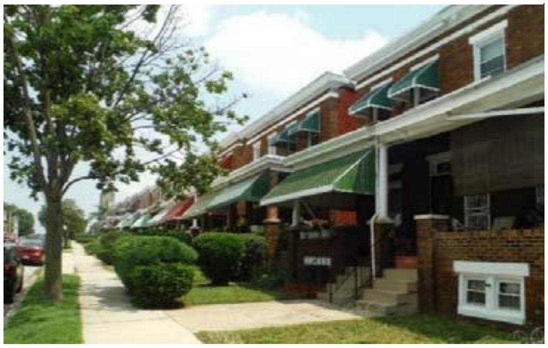
15) Greater Rosemont Historic District (MIHP #B-5112)

The Greater Rosemont Historic District is a primarily residential area roughly bounded by West Franklin Street, Edmondson Avenue, and the Western Maryland and Pennsylvania Railroad tracks. The district dates to the late nineteenth- and early twentieth-centuries, and includes numerous commercial and industrial buildings, churches, and government buildings. Architectural styles include Colonial Revival, Spanish Revival, Craftsman, and Art Deco. The district is eligible under Criterion A for being one of a few city neighborhoods that illustrates the rapid speculative development of streetcar suburbs and the evolution of Baltimore row housing from the late Victorian period until the 1950s. It is also eligible under Criterion C for having virtually every type of attached dwelling popular during the late Victorian period to the 1950s, and for its overall level of distinctiveness and good architectural integrity. The estimated period of significance is from the late nineteenth century to the 1950s.

16) Edmondson Avenue Historic District (MIHP #B-5187)

The Edmondson Avenue Historic District contains over 1,600 buildings, most of which are late nineteenth to mid-twentieth century residences with some commercial and light industrial buildings (**Figure V-15**). It is roughly bounded by West Franklin Street to the south, Bentalou Street on the west, Braddish Avenue on the east, and Winchester Street to the north. The district is listed under Criterion A for its association with the growth of West Baltimore, the post-World War II racial transition of West Baltimore, and the role of the new African-American residents in establishing enduring community institutions. It is also listed under Criterion C for being architecturally significant as an example of an early twentieth-century streetcar suburb with a diverse range of rowhouse designs. The period of significance is from 1885 to 1960.

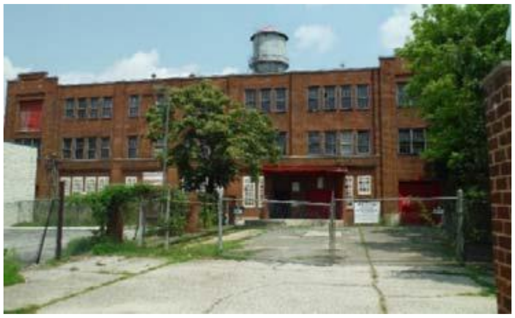
Figure V-15: Edmondson Avenue Historic District



17) Ward Baking Company (MIHP #B-5112-2)

The Ward Baking Company property, located at 2140 Edmondson Avenue, has a historical industrial baking factory and delivery truck repair shop built between 1925 and 1927 for the country's largest and oldest baking company (**Figure V-16**). The facility utilized standard construction techniques and exterior ornamentation. The property is eligible for the NRHP under Criterion A in the area of industry as an important baking factory associated with Baltimore's industrial development.

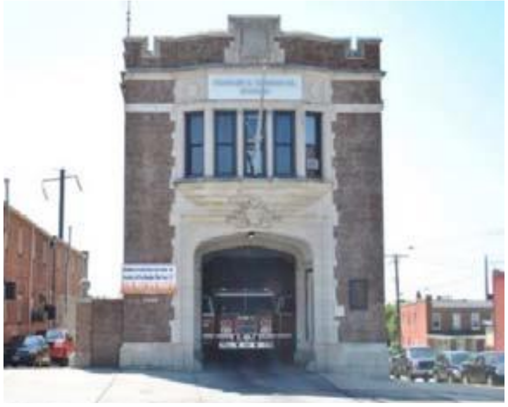
Figure V-16: Ward Baking Company



18) Fire Department Engine House No. 36 (MIHP #B-5112-4)

Fire Department Engine House No. 36 consists of a 1910 two-story brick and stone Tudor Revival fire house located at 2249 Edmondson Avenue (**Figure V-17**). The property is eligible for listing on the NRHP under Criterion A in the areas of social history and black heritage for its associations with the expansion and professionalization of Baltimore's fire protection services during the early twentieth century, and for its role in the racial integration of the Baltimore City Fire Department in 1953. It is also eligible under Criterion C in the area of architecture as a well-preserved example of the rare and early use of the Tudor Revival style in twentieth century Baltimore fire houses, and for embodying the distinctive characteristics of the Tudor Revival style.

Figure V-17: Fire Department Engine House No. 36



19) Pennsylvania Railroad Viaduct (MIHP #B-5064)

The Pennsylvania Railroad Viaduct is part of the Amtrak NEC over Gwynns Falls, bounded on the northeast by West Baltimore Street and the southwest by the CSX Railroad right-of-way. This is a 1914 four-span, reinforced concrete ribbed and open-spandrel arch structure with concrete stringers and floor beams supporting a solid reinforced concrete slab deck, concrete newels, and a three-pipe pedestrian railing. The structure is eligible under Criterion A in the areas of transportation and community planning and development as a well-preserved expression of early twentieth century urban planning efforts and as a response to improved locomotive size and technology. The viaduct is eligible for Criterion C in the areas of engineering and landscape architecture as an excellent example of reinforced open spandrel arch bridge design created in response to urban park planning efforts by the landscape architecture firm of Olmstead Brothers.

3. Archaeology

The *Phase IA Archeological Study* of the Study Area consisted of background research on the prehistory and history of the area, including historical maps and aerial imagery, and previously identified archaeological sites within a one-mile radius of the Study Area. The results of the background research were then integrated with archaeological predictive models to define areas of high, low, and no potential to contain archaeological deposits throughout the Study Area.

Documentary research conducted at MHT revealed that no previous archaeological studies have been performed within the Study Areas of any of the build alternatives for the B&P Tunnel Project. However, according to the most recent MHT GIS database, over the last 33 years, 22 archaeological studies have been conducted within a one-mile radius of the Study Area. According to the archaeological site files maintained by MHT, no previously recorded archaeological sites are located in the Study Area; however, 38 sites are present within a one-mile radius of the Study Area. Site 18BC177 (known as "AOS #1") is the only archaeological site within a one-mile radius of the Study Area that contains a prehistoric component.

The remaining 37 previously documented archaeological sites within a one-mile radius of the Study Area were historic and exhibit occupation from the eighteenth through early twentieth centuries. These sites include eighteenth- to nineteenth-century pottery kilns, late eighteenth- to early nineteenth-century rowhouses, nineteenth- to early twentieth-century rowhouses, mills and mill worker housing, an African-American church, portions of a nineteenth-century African-American neighborhood, a jail, a sugar refinery, and a Civil War Union Army camp and hospital.

The results of the *Phase IA Archeological Study* suggest that, from a regional perspective, the Study Area falls within a portion of Maryland that has considerable potential for containing prehistoric archaeological sites. Although the general region is considered to have a high probability for containing archaeological resources, establishing the overall archaeological sensitivity of the Study Area is complicated by the fact that while pre-contact populations may have once occupied the general region, the extent of modern urbanization must be taken into consideration when assessing the likelihood of discovering such archaeological remains in urban settings. The results of the *Phase IA Archeological Study* clearly reveal that, while the locations of the build alternatives have the potential to contain archaeological resources, landscapes within the Study Area have been subjected to considerable repeated alteration since the late eighteenth century. These alterations have included urban expansion north of the city center in the early nineteenth century, transportation improvements, and modern urbanization and suburbanization. During documentary reviews and field inspections, it became clear that remains of the region's pre-contact natural landscapes are limited within the Study Area. Given the severity and extent of past disturbance, most of the land within the Study Area is considered to have a low probability for containing any intact prehistoric archaeological resources.

While the subsurface integrity of most sites in the Study Area is probably poor, an occasional intact archaeological site could be encountered. It is anticipated that the Study Area would have a higher potential for containing post-contact sites than pre-contact sites. Suppositions are based on previous discoveries of intact archaeological sites in and around the Study Area, as well as the land use history of this portion of Baltimore City.

Due to the preliminary design stage of the B&P Tunnel Project, the potential size and configuration of the archaeological APE, as well as the uncertainty of Project variables pertaining to anticipated ground disturbance (e.g., cut-and-cover locations, cut locations, and ventilation shaft locations), detailed archaeological identification and effects studies will be undertaken at a later date as described in the Section 106 Programmatic Agreement (PA).

4. Section 106 Consultation

Section 106 requires consultation with MHT, which serves as the Maryland State Historic Preservation Officer (SHPO); federally recognized Native American tribes with an interest in the area; local governments; and other consulting and interested parties (36 CFR Part 800.2(c)). The themes of consultation to date have been to discuss the following:

- Methodology in developing the APE;
- Identification of historic properties listed or determined eligible for listing in the NRHP;
- Assessment of effects; and
- Avoidance, minimization, or mitigation efforts that may be needed to resolve any adverse effects on historic properties.

FRA initiated Section 106 review with the SHPO and other agencies by letter on June 11, 2014. In 2015, after consulting with MHT, FRA invited identified potential consulting parties to participate in the Section 106 process (36 CFR Part 800.2(c) and 36 CFR Part 800.3(f)). The following parties, including two federally-recognized tribes, agreed to consult:

- Delaware Tribe of Indians
- Shawnee Tribe
- Baltimore City Commission for Historical and Architectural Preservation
- Baltimore City Department of Transportation
- Baltimore City Planning Department
- Baltimore Heritage
- Baltimore Heritage Area Association, Inc.

- Historic Mount Royal Terrace Association
- Maryland Commission on Indian Affairs
- Maryland Department of Transportation
- Maryland Transit Administration
- Midtown-Edmondson Improvement Association
- Mount Royal Improvement Association
- Preservation Maryland

To date, the consulting-parties have met six times. The first consulting parties meeting was held on July 16, 2015, and provided an overview of the Project, the build alternatives under consideration, identified historic properties, and preliminary potential effects. A second consulting parties meeting, held on August 5, 2015, provided updated alternatives and historic properties information, and continued discussions from the first meeting. A third consulting parties meeting was held on September 28, 2015. This meeting included a tour of the Study Area, alternatives updates, recent additional NRHP evaluations, and a discussion of potential effects to historic properties. The fourth consulting parties meeting was held on October 29, 2015, and included a discussion of Project updates, the assessment of effects to historic properties, possible solutions for resolving adverse effects, and opinions on a Preferred Alternative. Project updates, including refinements to the build alternatives, and potential mitigation ideas were discussed at a fifth meeting on March 23, 2016. The views of consulting parties on the appropriate agreement document (Memorandum of Agreement or PA) were also considered at this meeting. At the sixth meeting on May 20, 2016, FRA provided Project and Section 106 updates, and continued discussing the PA. Consultation is continuing with the consulting parties to develop and implement the Section 106 PA. Correspondence between FRA, Amtrak, MDOT, SHPO, and other consulting parties can be found in **Appendix B.**

D. Section 4(f) Properties

Section 4(f) of the US Department of Transportation Act of 1966 (49 USC 303(c)) is a federal law that protects publicly-owned parks, recreation areas, wildlife and/or waterfowl refuges, or any significant historic sites, whether privately or publicly owned. Section 4(f) requirements apply to all transportation projects that require funding or other approvals by the USDOT. As a USDOT agency, FRA must comply with Section 4(f).

The Section 4(f) evaluation in this document follows established FRA Environmental Procedures and uses 23 CFR Part 774 and the 2012 Section 4(f) Policy Paper prepared by the FHWA as guidance.

Seventeen historic properties eligible for Section 4(f) protection have been identified in the Section 106 APE, as described above. Two park properties eligible for Section 4(f) protection have been identified adjacent to the proposed south portals of the build alternatives, described below. Additional information on historic properties is located in the *Architectural Historic Properties Survey* technical report, and the 13 additional MHT DOE Forms subsequently completed. FRA also prepared a technical memorandum containing updates to the identified list of historic properties. Concurrence from the SHPO regarding the eligibility of the historic properties is located in **Appendix B**. For more information on Section 4(f) properties, including maps of the historic properties, see **Section V.C**, **Section VI.C,** and **Section VI.D**.

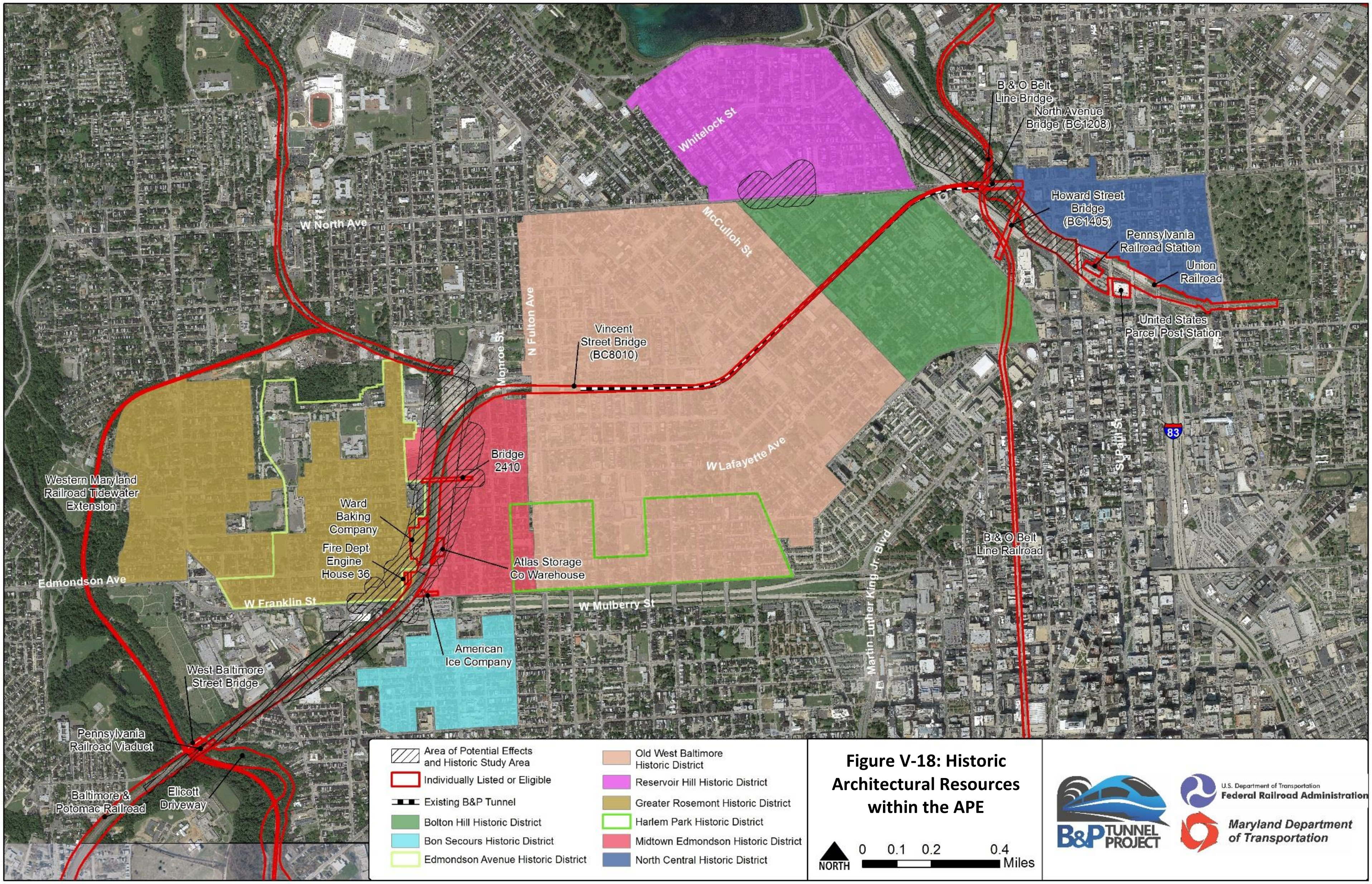


Figure V-18: Historic Architectural Resources within the APE

1. Public Parks and Recreation Areas

Winterling Elementary School Recreational Facilities (Bentalou Recreation Center)

The recreational facilities at Winterling Elementary, also known as the Bentalou Recreation Center, is a significant public park in the Project Area for providing recreational opportunity to students of Winterling Elementary School and other members of the surrounding community. The school property is located at 220 North Bentalou Street. Recreational facilities include basketball courts, playground, an indoor gym, and game rooms. The facility is owned by the City of Baltimore and administered by the Baltimore City Department of Recreation and Parks and Baltimore City Public Schools.

According to the 2012 FHWA Section 4(f) Policy Paper, which is used by FRA as guidance, “When a public school playground is open to the public and serves either organized or substantial walk-on recreational purposes that are determined to be significant, it will be subject to the requirements of Section 4(f)” (Question 14). The FHWA guidance also clarifies, “The term playground refers to the area of the school property developed and/or used for public park or recreation purposes such as baseball diamonds, soccer fields, tennis courts, track and field facilities, and other features such as jungle gyms or swing sets. This can also include open space or practice fields if those areas serve a park or recreation function” (Question 14). Based on this guidance, the Winterling Elementary School Recreational Facilities are considered a Section 4(f) resource.

Lafayette and Payson Park

Lafayette and Payson Park, located at the corner of Lafayette Avenue and North Payson Street, is an approximately 0.25-acre park owned by the City of Baltimore and administered by the Department of Recreation and Parks. The park includes a basketball court and playground facilities.

2. Historic Properties

The historic properties qualifying for Section 4(f) protection are described in **Section V.C.2,** above.

E. Natural Resources

Natural resources in the Study Area were preliminarily identified based on a review of existing scientific literature, watershed reports, GIS databases, and mapping. The *Natural Resources Technical Report* contains detailed information.

An investigation of available mapped information identified topography, geology, hydrology, vegetative cover, extents of the 100-year floodplain, and soils information from the following agency resources:

- United States Department of Agriculture, Natural Resource Conservation Service (USDA-NRCS) Web Soil Survey (WSS) for Baltimore, Maryland
- United States Geologic Survey (USGS) GIS Quadrangle Mapping
- Maryland Geological Survey
- Federal Emergency Management Agency (FEMA) GIS data
- National Wetlands Inventory (NWI) GIS data
- Maryland Department of Natural Resources (DNR) wetlands and waters GIS data
- Baltimore City GIS data

The Study Area, which included the areas of potential above-ground construction for each of the B&P Tunnel build alternatives, including the existing B&P Tunnel, was assessed in May 2015. These areas include portal and ventilation facility locations for Alternatives 3A, 3B, and 3C. The assessed areas were determined based on limits of disturbance developed in preliminary engineering. All natural resources found within these potential construction areas were inventoried. These resources are shown in detail in the *Natural Resources Technical Report* and **Figure V-19**.

The Study Area will experience more frequent heat waves and heavy precipitation events as a result of climate change (U.S. Global Change Research Program, n.d.). In Maryland, most of the state has warmed one to two degrees Fahrenheit over the last century, and rising temperatures and shifting rainfall patterns are likely to increase the intensity of both floods and droughts (U.S. Environmental Protection Agency, 2016). Sea level rise will impact the state and, specifically, Baltimore City. According to the Maryland Commission on Climate Change, sea level at Baltimore rose by one foot during the 20th century, and will continue to rise, independent of local subsidence (Maryland Commission on Climate Change, 2008). As a result of sea level rise, without adaptation measures, land will become inundated, and coastal areas will be at greater risk of storm surge and flooding during storm events. As a result of climate change, the Project may be impacted by flooding; however, this flooding is not expected to have bearing on the Project. For more information regarding flooding and flood hazards, please see **Section E.3** of this chapter.

1. Soils

The WSS for Baltimore City was used to identify 16 soil units within the Study Area, shown on **Figure V-19** and described in **Table V-18**. Two of the soil types, Keyport-Urban land complex and Urban land-Udorthents complex, are predominantly non-hydric, with hydric ratings of five and three percent, respectively. A hydric soil is formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the soil layers closest to the surface.

Table V-18: Soil Units within the Study Area

Map Unit Symbol	Map Unit Name	Hydric Rating (%)
13UB	Joppa-Urban land complex, 0 to 8 percent slopes	0
14UB	Urban land-Joppa complex, 0 to 8 percent slopes	0
15UB	Keyport-Urban land complex, 0 to 8 percent slopes	5
16UB	Urban land-keyport complex, 0 to 8 percent slopes	0
17C	Legore loam, 8 to 15 percent slopes	0
17E	Legore loam, 15 to 45 percent slopes	0
18UC	Legore-Urban land complex, 8 to 15 percent slopes	0
19UC	Urban land-Legore complex, 8 to 15 percent slopes	0
22UB	Manor-Urban land complex, 0 to 8 percent slopes	0
24UB	Matapeake-Urban land complex, 0 to 8 percent slopes	0
29UB	Sassafras-Urban land complex, 0 to 8 percent slopes	0
31UB	Urban land-Sassafras complex, 0 to 8 percent slopes	0
40C	Udorthents, loamy, very deep, 8 to 15 percent slopes	0
42E	Udorthents, smoothed, 0 to 35 percent slopes	0
43U	Urban land-Udorthents complex, occasionally flooded	3
44UC	Urban land, 0 to 15 percent slopes	0

Hydric rating indicates the percentage of the soil unit that is hydric:

- Hydric: 100 percent
- Predominantly hydric: less than 100 percent to 66 percent
- Partially hydric: less than 66 percent to 33 percent
- Predominantly non-hydric: less than 33 percent to greater than zero percent
- Non-hydric: zero percent

The majority of the soils within the Study Area are non-hydric. No hydric soils were found in the Study Area. Further soil analysis can be found in the *Natural Resources Technical Report*.

2. Topography, Geology, Aquifers, and Groundwater

The information that follows is preliminary and based on available mapping, some of which was published in 1935. Borings, and possibly geophysical exploration studies, will be necessary to develop more accurate evaluations. Borings that have not yet been completed will be undertaken during final design.

a. Topography

The Study Area is located in the Perry Hall Upland District of the Fall Zone Region within the Piedmont Plateau Physiographic Province of Maryland, which is within the Baltimore East and Baltimore West USGS quadrangles (7.5-minute series, 2014). The elevation is between 100 and 200 feet above mean sea level. The area is a geologic transition zone, where the sediments of the Coastal Plain Physiographic Province overlay the residual soils and basement rocks of the Piedmont Physiographic Province. The Coastal Plain deposits are found mostly in the higher elevations, whereas the soils and rock of the Piedmont are found mostly in the lower elevations of the Jones Falls Valley and the western portion of the Study Area where the sediments have been eroded, typically west of Fulton Avenue.

b. Geology

The geology of the Piedmont Plateau Province is characterized by meta-igneous and meta-sedimentary rock with igneous intrusions of pegmatite--a very hard rock with thin injection seams of quartzite--and smaller amounts of sedimentary rock interspersed (Maryland Geological Survey). Natural soils are residual soils, which have formed in place through weathering of the parent bedrock. Residual soils typically form a profile characterized by the progression from soil to decomposed rock, or saprolite to rock with increasing depths below the ground surface. In the eastern portion of the Study Area, east of Mount Royal Avenue and Callow Avenue, parent materials are mapped as the Carroll Gneiss Member of the James Run Formation. The western portion of the Study Area, primarily west of Fulton Avenue, is also mapped as Carroll Gneiss Member to the south of Laurens Street and Jones Falls Schist to the north. The Jones Falls Schist in this area is included in the Pegmatite Injection Complex where less than 50 percent of the bedrock consists of pegmatite.

Most rock within the Study Area has very low permeability, with little pore space to transmit water; groundwater is conveyed through joints, fractures, and other discontinuities (Trapp, H. and M.A. Horn, 1997). Piedmont rock is between 1.2 billion to 196 million years old, formed from the Precambrian through the Jurassic periods (Trapp, H. and M.A. Horn, 1997). The main types of crystalline rock found in this region are coarse-grained gneisses and schists that have undergone several periods of metamorphism (Trapp, H. and M.A. Horn, 1997). Much of the consolidated rock is overlain with unconsolidated material known as regolith, which is formed by the weathering of rock and consists of saprolite, colluvium, alluvium, fill, and natural soil (Trapp, H. and M.A. Horn, 1997).

c. Aquifers

The Study Area overlies the Piedmont Crystalline Rock Aquifer, an underground layer of water-bearing rock. Groundwater recharge is highly variable in this region, which is almost entirely dependent on precipitation and local runoff absorbed through the regolith into rock fractures (Trapp, H. and M.A. Horn, 1997).

A sole source aquifer (SSA) is the primary source of drinking water for an area; it supplies a minimum of 50 percent of the drinking water overlying the aquifer (EPA, 2015). These areas may have no alternative drinking water sources that could "physically, legally, and economically supply" those dependent on the aquifer for drinking water (EPA, 2015). No SSA, water supply reservoirs, or wells are located near the existing B&P Tunnel. Surface water from rainfall and snowmelt is the source of the Baltimore City drinking water supply. Liberty Reservoir, Loch Raven Reservoir, Prettyboy Reservoir, and the Susquehanna River contribute to Baltimore's water supply. None of these drinking water sources would be affected by the B&P Tunnel Project.

The closest USGS groundwater well is in East Baltimore, within the Patuxent Formation Aquifer of the Lower Cretaceous age in the Coastal Plain Province. The groundwater characteristics of the well will have little bearing on the Study Area, since this aquifer is in a different physiologic province.

d. Groundwater

Groundwater typically flows along the contacts of the clay and sand facies of the Patuxent Formation, at the junction of the Coastal Plain, and Piedmont Provinces. It continues through the decomposed rock in fractures and other discontinuities.

3. Water Resources

a. Streams and Navigable Waterways

The desktop investigation identified three waterways within the B&P Tunnel Study Area: Jones Falls, Gwynns Falls, and a tributary to the Gwynns Falls (see **Figure V-19**).

The Jones Falls is a perennial, traditionally navigable waterway that flows through the northeastern portion of the Study Area. The waterway is considered a Navigable Water under Section 10 of the US Rivers and Harbors Act. The Jones Falls mainstem, below Lake Roland, is a Maryland Department of Environment (MDE)-Designated Use I Waterway for Water Contact Recreation and Protection of Warm Water Nontidal Aquatic Life. Tributaries that drain to the Jones Falls include Moores Branch, Roland Run, Towson Run, Western Run, and Stony Run. There are no high-quality, Tier II, stream segments located within the Jones Falls Watershed. The Jones Falls channel and its banks also have been highly altered; its deeply incised nature and overlay of crystalline bedrock is typical of rivers of the region (Reger, J.P. and E.T. Cleaves, 2008).

The Gwynns Falls is another perennial, traditionally-navigable water located in the southwest portion of the Study Area. This part of the Gwynns Falls is an MDE-Designated Use I Waterway. The stream flows for 25 miles through Baltimore County and Baltimore City before emptying into the tidal Patapsco River.

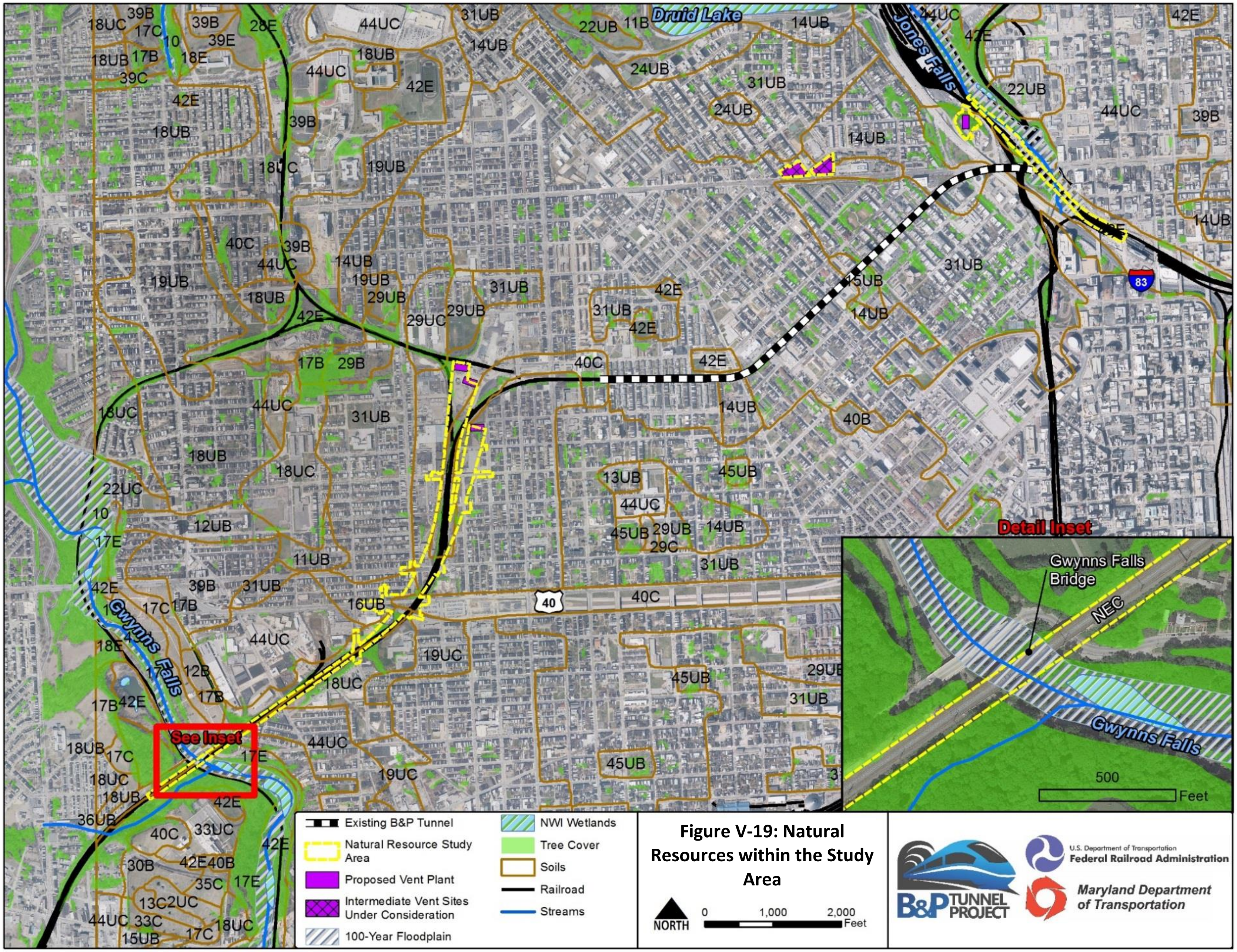


Figure V-19: Natural Resources within the Study Area

b. Wetlands

Wetlands investigations were conducted in accordance with the US Army Corps of Engineers, *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0* (Ed. Berkowitz, 2012).

Routine wetland determination methods, with onsite inspection, were used to determine the presence of wetlands in the Study Area. Waters of the US, other than wetlands, were delineated using the limits defined in 33 CFR Part 328—Definition of Waters of the United States. The boundaries of nontidal waters of the US other than wetlands were set at the ordinary high water mark (OHW). The OHW is determined in the field using physical characteristics established by the fluctuations of water (e.g., change in plant community, changes in the soil character, and shelving) in accordance with US Army Corps of Engineers Regulatory Guidance Letter No. 05-05.

The Study Area was assessed for wetland areas in May 2015. No wetlands were identified within the Study Area. Two NWI wetlands were identified nearby; one within the 100-year floodplain of the Jones Falls (classified as riverine) and one within the 100-year floodplain of the Gwynns Falls (classified as freshwater pond) (see **Figure V-19**). These wetlands would not be impacted directly or indirectly by any of the potential B&P Tunnel alignments.

c. Water Quality

i. *Jones Falls Water Quality*

Waters of the Jones Falls watershed are considered impaired waters under the Clean Water Act (CWA), and were first identified on Maryland’s 303(d) List of Impaired Waters in 1996. The stream was listed as impaired by nutrients, sediment, copper, lead, zinc (1996), fecal bacteria (2002), and impacts to biological communities (2002, 2004, and 2006).

A Water Quality Analysis (WQA) for zinc contamination in the Jones Falls was submitted by the Maryland Department of the Environment (MDE) to the Environmental Protection Agency (EPA) in 2002. According to this analysis, the aquatic life criteria and designated uses associated with zinc are being met in the Jones Falls and the waterway does not require a Total Maximum Daily Load (TMDL) to achieve water quality standards (MDE, 2002). A WQA of copper and lead for the Jones Falls was submitted to the EPA in 2004; a TMDL is not required for the entire 8-digit basin of the Jones Falls, but is required for its lower-most 12-digit basin (basin code 02-13-09-04-10-32), which was found to be impaired by copper in the WQA. The copper and lead WQA concluded further monitoring within the 12-digit basin is required to identify the source of impairment and determine whether a TMDL will be required (EPA, 2004).

In 2009, a WQA of eutrophication for the Jones Falls Watershed in Baltimore City and Baltimore County, Maryland was submitted to the EPA. The study indicated the Jones Falls Watershed is not impaired by nutrients based on a biological stressor identification (BSID) analysis and recent water quality data analysis conducted by MDE. The WQA indicates no TMDL is required for eutrophication in the Jones Falls Watershed (MDE, 2009).

A proposed TMDL of fecal bacteria for the nontidal Jones Falls Basin in Baltimore City and Baltimore County, Maryland was submitted to EPA in 2006; the TMDL was established at 860 billion most probable number (MPN) of *E. coli* per day. The sources of fecal bacteria were estimated at five representative stations within the Jones Falls Watershed, based on one year of bacterial sampling. Multiple antibiotic-resistance analysis was used to determine the bacterial source and human waste was determined to be the source of the majority of the bacteria in the Jones Falls (MDE, 2006).

A proposed TMDL of sediment in the Jones Falls Watershed in Baltimore City and Baltimore County, Maryland, was submitted to EPA in 2011. A TMDL of combined nonpoint source, stormwater, and processed wastewater allocations was established to ensure sediment loads and their effects would support the Use I, II, and IV designations and protect against sediment-related impacts to aquatic health.

The Jones Falls average annual TMDL of sediment/total suspended solids (TSS) was established at 7,109.3 tons per year. The average annual TMDL is a total load allocation for nonpoint sources, regulated stormwater, and process water waste combined. The load allocation for nonpoint sources is 1,022.0 tons per year; National Pollutant Discharge Elimination System (NPDES) regulated stormwater load allocation is 6,084.9 tons per year; Process Water Waste Load Allocation is 2.4 tons per year. Load allocations were set based on a BSID methodology, which concluded biological communities in the Jones Falls Watershed are impaired due to flow and sediment-related stressors. Stressors affecting the biological community of the Jones Falls were identified as channelization, channel alteration, poor epifaunal substrate, poor bank stability, and high embeddedness. The sediment TMDL will not completely resolve the biological impairment of the Jones Falls Watershed since other potential stressors to biological communities were identified during the BSID analysis and other biological monitoring, including of chlorides and sulfate. Further analyses will be conducted by MDE to establish TMDLs for all impairing substances in the watershed (MDE, 2011).

i. *Gwynns Falls Water Quality*

Waters of the Gwynns Falls Watershed are considered impaired under the CWA and were first identified on Maryland's 303(d) List of Impaired Waters in 1996. The stream was listed as impaired by nutrients, sediments (1996), fecal bacteria, and impacts to biological communities (2002).

A WQA of eutrophication for the Gwynns Falls Watershed in Baltimore County and Baltimore City, Maryland was submitted by MDE in 2009 and approved by the EPA in 2010. According to this analysis, a TMDL for nutrients is not necessary to achieve water quality standards. EPA approved TMDLs for nitrogen and phosphorous in the Baltimore Harbor in 2007. The Gwynns Falls drains into the Baltimore Harbor, so best management practices (BMPs) to improve water quality in the Harbor will require nutrient reductions in the Gwynns Falls. The nutrient WQA supports a revision of the phosphorous listing for the Gwynns Falls watershed from an impaired Category 5 waterbody to a Category 2 waterbody, indicating that it meets some water quality standards, but that there is insufficient data for all impairments to be assessed (MDE, 2009).

A proposed TMDL of fecal bacteria for the nontidal Gwynns Falls Basin in Baltimore City and Baltimore County, Maryland, was submitted to EPA in 2006 and approved in 2007, establishing a TMDL at 917.4 billion *E. coli* MPN per day. USGS daily flow monitoring data was collected at four representative monitoring stations in the Gwynns Falls Watershed for one year. Multiple antibiotic resistance analysis was used to determine the bacterial source and human waste was found to be source of the majority of the bacteria in the Gwynns Falls.

A proposed TMDL of sediment in the Gwynns Falls Watershed in Baltimore City and Baltimore County, Maryland, was submitted to EPA in 2009 and approved in 2010. MDE used BSID methodology to determine whether elevated sediment loads were negatively impacting the stream environment. This analysis determined biological communities of the Gwynns Falls Watershed are impaired by flow and sediment-related stressors, including channelization, channel alteration, and bar formation. A reference watershed approach was used to quantify the negative impact of sediment-related stressors on the biological communities and a sediment-loading threshold established. The threshold was used to determine a TMDL for the Gwynns Falls Watershed. The Gwynns Falls average annual TMDL of TSS is 13,996.2 tons per year. This TMDL ensures the watershed can meet its use class criteria with no negative impacts from sediment loads.

d. Floodplains and Flood Hazards

Executive Order 11988 requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with construction and modification of floodplains. USDOT Order 5650.2 guides the USDOT's implementation of EO 11988 and requires the detailed consideration of impacts to floodplains, as well as avoidance and minimization.

Data from the FEMA Flood Insurance Rate Maps (FIRM) was obtained and overlaid on GIS mapping of the B&P Tunnel potential alignments to identify regulated floodplains within the Study Area (see **Figure V-19** and Project mapping in the *Natural Resources Technical Report)*. See **Section VI.E.4** for information on Project floodplain impacts. Floodplains are also regulated at the state level and any construction in the nontidal floodplain will require a Waterway Construction Permit from MDE. There are two 100-year floodplains within the Study Area: one associated with the Jones Falls and one with the Gwynns Falls (see **Figure V-19**).

4. Coastal Zones

The Study Area is within the Maryland Coastal Zone. The Maryland Coastal Zone extends from three miles out in the Atlantic Ocean to the inland boundaries of the 16 counties and Baltimore City that border the Atlantic Ocean, Chesapeake Bay, and Potomac River up to the District of Columbia. The Maryland Department of the Environment issues a Federally Mandated State Authorization for Coastal Zone Consistency as part of its Wetlands and Waters Authorization. This Authorization constitutes official notification that authorized activities are consistent with the Maryland Coastal Zone Management Program, as required by Section 307 of the Federal Coastal Zone Management Act of 1972, as amended.

5. Wildlife and Habitat

Wildlife habitat within the Study Area is limited due to high levels of urbanization. Potential wildlife habitat in the region includes the Jones Falls, street trees, residential yards, landscaped areas around buildings, and hedgerows and forested areas around the I-83 interchange and Baltimore City parks, including: Druid Hill Park, Madison & Whitelock Park, John E. Howard Park, Brookfield Park, Pauline Founteroy Park, William Mcabee Park, Lafayette & Payson Park, Harlem Inner Block Park, Cumberlands and Carey Park, Eutaw Place Median Park, Pennsylvania Triangle Park, Reverend Quille Park, Saint Katherine's Park, North & Woodbrook Park, Druid Hill & Baker Park, Park Avenue Median Park, Reservoir Hill Park, Maple Leaf Park, Mount Royal Terrace Park, Newington Avenue Park, and Whitelock & Park Avenue Park.

Some of the wildlife species known to inhabit Baltimore City include songbirds such as mockingbirds (*Mimus polyglottos*) and robins (*Turdus migratorius*), rock doves (*Columba livia*), mourning doves (*Zenaida macroura*), Eastern gray squirrels (*Sciurus carolinensis*), Eastern chipmunks (*Tamias striatus*), house mice (*Mus musculus*), Norway rats (*Rattus norvegicus*), Virginia opossums (*Didelphis virginiana*), raccoons (*Procyon lotor*), red foxes (*Vulpes vulpes*), American toads (*Anaxyrus americanus*), and white-tailed deer (*Odocoileus virginianus*). The Study Area likely supports populations of many of these species. Some of the fish species commonly found in the lower Jones Falls include: white sucker (*Catostomus commersoni*), yellow bullhead (*Ameiurus natalis*), satinfin shiner (*Cyprinella analostana*), redbreast sunfish (*Lepomis auritus*), longnose dace (*Rhinichthys cataractae*), green sunfish (*Lepomis cyanellus*), and American eel (*Anguilla rostrata*). (For discussion of invasive species, see **Section V.E.5.c,** below.)

a. Aquatic Habitat

The Jones Falls watershed is listed on the Maryland list of water quality limited (WQLs) segments as impaired for impacts to biological communities. Maryland DNR conducts a quantitative assessment of the health of biologic communities within stream systems called the Index of Biological Integrity (IBI). The percentage of stream miles with an IBI of less than three is calculated and compared to a reference stream less than 10 percent degraded to determine the relative biological health of the stream. The Code of Maryland Regulations (COMAR) requires the Jones Falls support a minimum Use I designation for water contact recreation and protection of nontidal warmwater aquatic life. The Jones Falls is not attaining the designated use of supporting aquatic life since it is biologically impaired. Biological impairment is evaluated by assessing the Benthic and Fish Indices of Biological Integrity (BIBI/FIBI), developed by the Maryland Biological Stream Survey. Biological impairment is assessed using a BSID that determines the main causes of reduced biological function.

A Watershed Report for Biological Impairment of the Gwynns Falls Watershed in Baltimore City and Baltimore County and BSID results and interpretation were submitted to EPA in 2009 and approved in 2010. The BSID data suggests degradation of biological communities of the Gwynns Falls is due in large part to the impacts of urban land use and related impacts of altered hydrology, elevated ammonia levels, chlorides, and conductivity. It also suggests biological communities of the Gwynns Falls are likely degraded by flow and sediment-related stressors and anthropogenic channelization of streams.

There is no National Marine Fisheries Service (NMFS)-designated essential fish habitat in the Study Area.

b. Terrestrial Habitat

A desktop assessment was conducted prior to the initiation of field work to approximate the potential boundaries of existing forest stands through review of current aerial photography in GIS (see **Figure V-19**). Areas of above ground disturbance were identified along the entire length of the existing B&P Tunnel corridor and at proposed ventilation shafts and tunnel portals. Reconstructing and modernizing the existing B&P Tunnel would require cut-and-cover construction in existing tunnel right-of-way and therefore the entire length of the alignment was investigated. A field survey of natural resources was conducted in these areas in May 2015 to identify any forest/street tree resources that may be impacted by proposed construction. The *Natural Resources Technical Report* contains a list of potential impacts.

The Maryland Department of Natural Resources (MDNR) defines a forest as follows:

- Biological community dominated by trees and other woody plants covering a land area of 10,000 square feet or larger and at least 35-feet wide.
- Areas with at least 100 trees per acre with at least 50 percent having a two-inch or greater diameter at breast height (dbh).
- Areas that have been cut, but not cleared.
- Does not include orchards.

MDNR defines specimen trees as having a dbh of 30 inches or greater, or trees with 75 percent or more dbh of the current state champion of that species.

The Maryland Forest Conservation Act applies to any activity requiring application for subdivision, grading permit, or sediment control permit for an area 40,000 square feet or greater. Applicants following the Forest Conservation Act are required to submit a Forest Stand Delineation (FSD) and a Forest Conservation Plan (FCP), prepared by a Maryland-qualified forest professional, to MDNR or the local reviewing agency for review and approval. A FSD is an inventory of existing forest/trees and other environmental site features. It provides a basis for determination of the most suitable forest and resource protection areas during the early stages of site development planning.

A FCP is prepared during the latter stages of site design and details the limits of disturbance; amount of forest that would be retained, removed, reforested, and afforested during site development; locations of specimen trees for retention and removal; types and locations of tree/forest protection devices and supplemental tree care; maintenance and monitoring parameters; and long-term protection measures. The State Forest

Conservation Technical Manual (Manual), Third Edition outlines the requirements for FSD and FCP preparation and submittal (Howell, G.P. and T. Ericson, 1997).

The Maryland Roadside Tree Law was passed in 1914 to ensure that roadside trees were properly protected and cared for and to ensure compatibility with public utilities. A Roadside Tree Care Permit must be obtained from MDNR prior to pruning, fertilizing, removing, planting, or caring for any roadside tree. A roadside tree grows all or in part within a public road right-of-way. Any work (including removal) conducted on a roadside tree that is 20 feet or higher must be performed by a Maryland licensed tree expert. A Roadside Tree Permit applies to trees within the public right-of-way that are not within forest stands. Most street trees occur along roadways either between the road and a sidewalk or within a center island between two roadways. Specimen tree removals would require a variance in compliance with the 2009 Maryland Forest Conservation Act amendment, No Net Loss of Forest Policy (Senate Bill 666), which would be coordinated with MDNR during final design.

The majority of the trees are identified as planted street trees.

c. Invasive Species

The Study Area is located in residential, industrial, and railroad areas. The majority of the species identified during the field investigation were planted street trees. None of the alternatives intersect forested areas. A full characterization of plant species was not conducted in this preliminary field investigation, although some invasive species were identified within the rail facilities, including Princess tree (*Paulownia tomentosa*), Tree of Heaven (*Ailanthus altissima*), Norway maple (*Acer platanoides*), multiflora rose (Rosa multiflora), Oriental Bittersweet (*Celastrus orbiculatus*), and Japanese honeysuckle (*Lonicera japonica*).

6. Rare, Threatened and Endangered Species

Based on agency correspondence received to date, no state- or Federally-listed threatened or endangered species are known to exist within the Study Area. The MDNR Project Review Division (PRD) response from June 29, 2015 indicates no threatened or endangered species are located in the Study Area. The United States Fish and Wildlife Service (USFWS) response, dated September 8, 2015 also indicated no threatened or endangered species in the Study Area; however, several transient species of migratory birds may traverse the Study Area. The B&P Tunnel Project will comply with the provisions of the Migratory Bird Treaty Act to implement appropriate conservation measures for all project activities.

Correspondence with the USFWS regarding the Northern Long-eared Bat indicates that the USFWS has refined its original critical habitat area for the bat to exclude major cities and some Maryland counties. The *Information for Planning and Conservation* (IPaC) species list for the B&P Tunnel does not include the Northern Long-eared Bat within the Study Area (USFWS, 2015).

F. Hazardous Materials

The Resource Conservation and Recovery Act (RCRA), implemented by the US Environmental Protection Agency (US EPA), is the primary federal regulatory framework for monitoring and tracking the generation and disposal of hazardous wastes in the United States, while the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides a framework for remediation and site clean-up. The Toxic Substances Control Act (TSCA) also provides guidance on the disposal of asbestos, lead-based paint, and PCBs. Other Federal agencies with responsibilities for protecting human health and the environment from the impact of hazardous wastes or contaminants include, but are not limited to, the US Department of Labor (USDOL) Occupational Safety and Health Administration (OSHA); US Department of Health and Human Services, and the US Department of Transportation (USDOT). For the state of Maryland, MDE is the primary regulatory authority, under Title 26 of COMAR. MDE enforces federal and state hazardous material and contamination requirements through its Land Redevelopment Program (LRP) and Oil Control Program (OCP). Maryland Occupational Safety and Health (MOSH) is authorized under OSHA to develop its own health and safety programs for protect workers from hazardous material exposures. by the federal regulatory agencies covering occupational The complete list of reviewed Federal and state regulatory databases is included in the *Hazardous Materials Assessment Technical Report*.

A Preliminary Screening Assessment (PSA) to identify potential sites of environmental concern during construction was conducted throughout the Study Area. The assessment includes the evaluation of sites with historical operations associated with contaminants or hazardous materials that may have migrated into the proposed limits of disturbance and could be impacted (i.e., mobilized) during tunnel construction activities (see **Figure V-20**).

As part of the PSA evaluation, federal and state environmental database records were reviewed in an effort to evaluate historical environmental incidents in the vicinity of each proposed alternative that could impact local communities or the surrounding environment if contamination is encountered during construction. The federal and state regulatory databases have been researched and reported in accordance with the search radii specified by ASTM Standard E 1527-13.

Sites in proximity to the Preferred Alternative with environmental concerns were ranked as low, medium, or high priority in accordance with the criteria outlined below.

The following criteria provide general guidelines for priority ranking; with each site evaluated using a weight of evidence approach to create a final priority ranking based on the risk associated with the contaminant and probability of mobilization during construction.

Sites were not included in the PSA if**:**

- No history of contamination or spills; and
- Down or cross gradient from the alignment; and
- Greater than 500 feet from the alignment.

A site was considered a low priority if:

- No history of contamination or spills from regulatory files, Sanborn maps, etc.; or
- MDE cases are closed with good information on cleanup; and
- Down or cross gradient and greater than 250 feet, but less than 500 feet from the alignment; or
- Small quantity generator; or
- Contains single heating oil tank or a historical or operable Above-ground Storage Tank (AST) or Underground Storage Tank (UST) less than 550-gallon in volume.

A site was considered a medium priority if:

- History of contamination, dumping and/or spills; and
- MDE cases are closed with insufficient information regarding resolution; and
- Greater than 500 feet upgradient of the alignment; or
- Down or cross gradient and greater than 100 feet, but less than 250 feet from the alignment; or
- Only listed as historical dry cleaner or gasoline/auto station in regulatory files or Sanborn maps; or
- Large quantity generator; or

- Single historical or operable AST/UST greater than 550-gallons in volume;
- Multiple historical or operable ASTs/USTs; or
- Hazardous waste disposal or storage onsite; or
- Violation notices.

A site was considered a high priority if:

- History of contamination, dumping and/or spills, as identified in regulatory files or Sanborn maps; and
- MDE cases are open; and
- Less than 500 feet upgradient of the alignment; or
- Down or cross gradient and less than 100 feet from the alignment; or
- Multiple historical or operable ASTs/USTs; or
- Voluntary Cleanup Program (VCP) or Superfund site.

The priority ranking system provides a basis for further site investigations. Residential properties have the least potential risk for environmental concern due to storage of relatively small quantities of hazardous materials or hazardous waste. Releases or spills are normally minor unless improperly stored or used in large quantities.

In addition to a review of regulatory database information, Sanborn Fire Insurance maps were reviewed to identify the presence of historical industrial or hazardous materials handling sites that may have released contaminants that could be present within the proposed construction limits of disturbance. The Sanborn maps provide detailed historical information for property development and use areas dating back to the late 1800's and provide property information prior to the initiation of environmental regulatory database listings in the 1970's. The Sanborn findings were incorporated into the PSA sheets and site priority rankings.

As a final step in the PSA review, a visual, noninvasive reconnaissance of high and medium priority sites and properties adjacent to each alternative was performed. No buildings or sites were entered during the reconnaissance. The B&P Tunnel Project hazardous material personnel performed site reconnaissance to verify existing onsite conditions and map visible environmental conditions, including: stained soil/pavement; dumping/burning areas; oil and gas-fuel dispenser, surface sheen; roads/tracks; transformers; drum storage; and above ground storage tanks. Visual observations were conducted for high and medium priority sites within a 500-foot distance from each alternative.

Throughout the investigation area there is a history of industrial activity, including dry-cleaning, rail maintenance, gas stations, and automotive repair. Current and historical hazardous materials used within the Study Area include, but are not limited to, petroleum, solvents, and industrial contaminants.

The PSA identified 71 potential hazardous material or contaminated sites proximal to the existing B&P Tunnel. There were 36 sites with a low-priority ranking (**Table V-19**), 24 sites with a medium-priority ranking (**Table V-20**), and 11 sites with a high-priority ranking (**Table V-21**).

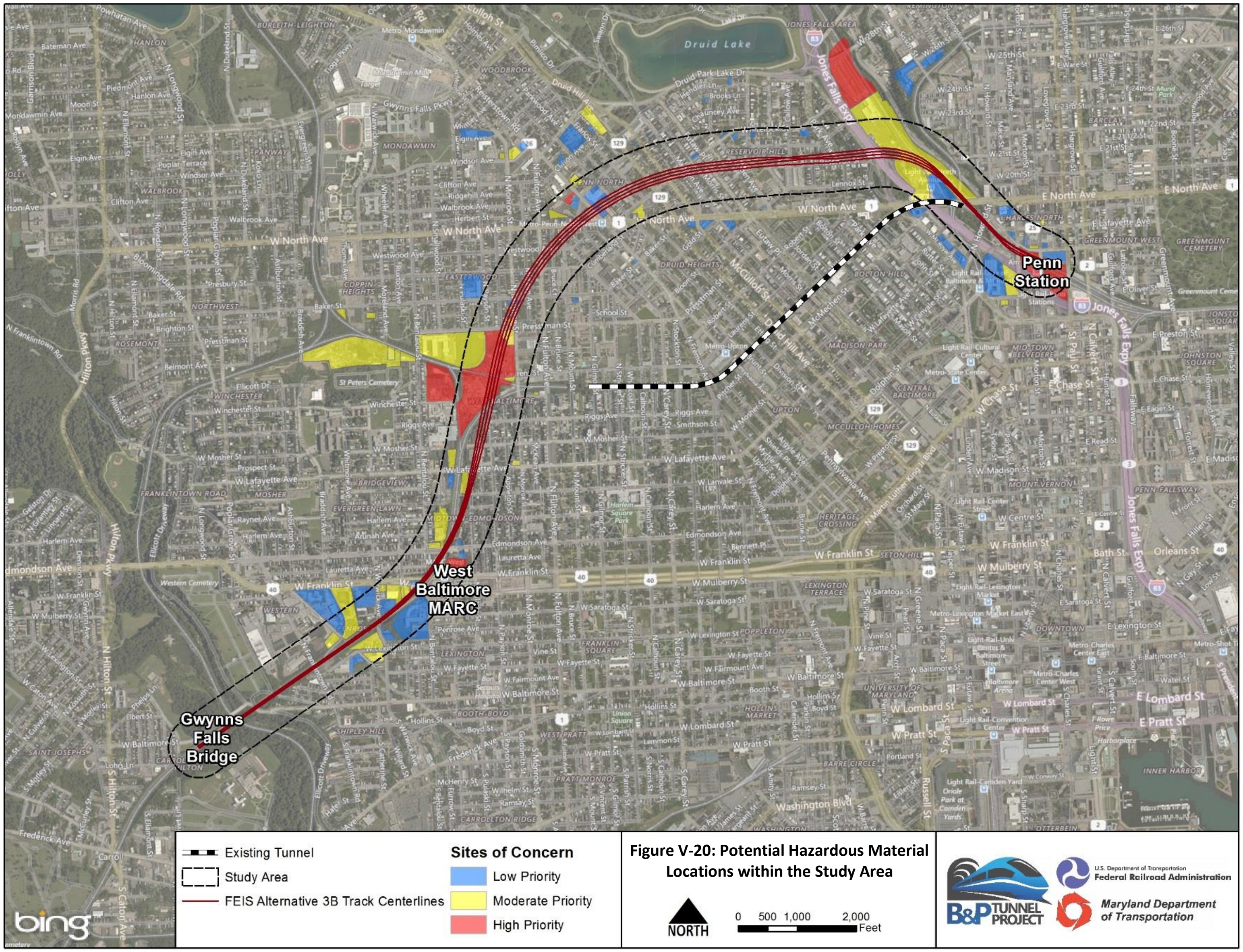


Figure V-20: Potential Hazardous Material Locations within the Study Area

Table V-19: Low Priority Hazardous Material Sites near the Existing B&P Tunnel

Site ID #	Property Description	Address	Hazard Type
BP-078	William R Lockhart residence	1803 Riggs Avenue	Petroleum release
BP-098	Gilmor Homes, Baltimore Housing Authority	1601 Vincent Court	Petroleum release
BP-103	Gilmor Homes	1640 Balmor Court	Petroleum use
BP-123	Sharon Baptist Church, Inc.	1373 North Stricker Street	Petroleum use
BP-128	Baltimore City	2311 Pennsylvania Avenue	Petroleum release
BP-132	Cearney's Radiator Service	1204 North Calhoun Street	Automotive history
BP-136	Baltimore City	1301 Laurens Street	Petroleum use
BP-140	Empire Laundry & Dry Cleaners	1201 North Carey Street	Dry-cleaning history
BP-143	William Pinderhughes Elementary School	1200 North Fremont Avenue	Automotive history
BP-144	Modern Junk & Salvage Co.	1423 North Fremont Avenue	Industrial history
BP-148	Lieu Yaw Laundry	1220 North Fremont Avenue	Dry-cleaning history
BP-149	Ernest Arjone	1208 North Fremont Avenue	Automotive history
BP-150	K & L Auto Service	1206 North Fremont Avenue	Automotive history
BP-151	Fremont Service Station	1202 North Fremont Avenue	Automotive history
BP-152	United States Post Office	1832 Pennsylvania Avenue	Petroleum use
BP-154	Inland Oil Co.	1126 North Fremont Avenue	Automotive history
BP-162	St. James Terrace Apartments	827 North Arlington Avenue	Petroleum release
BP-166	Talk Dirty Laundry	1729 Pennsylvania Avenue	Dry-cleaning history
BP-171	Goldenberg's Bargain Outlet	1705 Pennsylvania Avenue	Petroleum use
BP-173	Jason H Tilbillman	545 Wilson Street	Dry-cleaning history
BP-176	Wilson & Etting Park	1709 Division Street	Automotive history
BP-177	Jim's Auto Repair	528 Wilson Street	Automotive history
BP-179	Minor's Cleaners	1800 Linden Avenue	Dry-cleaning history
BP-182	Ernest Brooks	1711 Druid Hill Avenue	Dry-cleaning history
BP-183	Mitchell Cleaners & Dyers	414 Wilson Street	Dry-cleaning history
BP-187	Total Health Care	1501 Division Street	Petroleum use

Site ID #	Property Description	Address	Hazard Type
BP-204	Mount Royal Elementary School	121 McMechen Street	Petroleum use
BP-210	Lincoln Motor	410 West North Avenue	Automotive history
BP-211	AAA Mid-Atlantic Inc.	1401 West Mount Royal Avenue	Petroleum use
BP-213	Bolton Yard	80 West Oliver Street	VCP action
BP-214	Amtrak/Jones Falls Substation	151 West Oliver Street	Petroleum release
BP-217	Baltimore Postal Service Vehicle Maintenance	60 West Oliver Street	Petroleum release
BP-218	Penn Esso Station	1716 Maryland Avenue	Automotive history
BP-220	Atlantic Automobile Repairs	6 West Lanvale Street	Automotive history
BP-222	Binswanger, Sylvan W	2 East Lanvale Street	Automotive history
BP-225	National Auto Radiator and Fender Company Inc.	9 East Lanvale Street	Automotive history

Table V-20: Medium Priority Hazardous Material Sites near the Existing B&P Tunnel

Site ID #	Property Description	Address	Hazard Type
BP-050	Matrix Metals	2045 Winchester Street	VCP action, Petroleum use
BP-056	The Baltimore Asphalt Paving Co. (P. Flanigan & Sons, Inc., Pen Mar Company, Inc.)	1320 North Monroe Street	Petroleum use, Industrial history
BP-090	Sandtown Winchester Community Center	1114 North Mount Street	Petroleum use
BP-117	Harvey Johnson Towers	1510 West Mosher Street	Petroleum release
BP-120	Baltimore City Fire Department #8	1503 West Lafayette Avenue	Petroleum release
BP-138	Whitaker Citgo and Fuel Co.	920 North Carey Street	Petroleum release
BP-139	St. Peter Claver Catholic Church	1542 North Fremont Avenue	Petroleum release
BP-146	William G Brown Community Funeral Home	1308 North Fremont Avenue	Petroleum release
BP-156	Amoco Station	1101 West North Avenue	Petroleum release
BP-159	Lafayette Market	1700 Pennsylvania Avenue	Petroleum use
BP-164	Ball property and alleyway	634 Pitcher Street	Petroleum use
BP-186	Druid Heights Community Development Corp.	1711 McCulloh Street	Petroleum use
BP-191	Valentine residence	1513 Druid Hill Avenue	Petroleum release

Site ID #	Property Description	Address	Hazard Type
BP-196	Baltimore City Fire Station #13	405 McMechen Street	Petroleum release
BP-200	B & E Properties	1631 Park Avenue	Petroleum release
BP-202	Bolton House North Apartments	1600 West Mount Royal Avenue	Petroleum use
BP-203	MTA Light Rail Maintenance Facility	344 West North Avenue	Petroleum use, Railway history
BP-206	Baltimore City DPW Highway Maintenance Garage	560 West North Avenue	Petroleum use
BP-207	Golden Touch Care Center	140 West Lafayette Avenue	Petroleum release
BP-208	Baltimore Fire Department, Aerial Tower 111	401 West North Avenue	Petroleum use
BP-212	Maryland Institute College of Art - Fox Building	1341 Dickson Street	Petroleum use
BP-219	Maryland Community Resource Center/Sterling Auto Radiator Works	1731 Maryland Avenue	Petroleum release
BP-221	Metro Laundry & Cleaners/La La Auto Repair Inc./Atlantic Auto Service	1700 North Charles Street	Dry-cleaning history, Petroleum use
BP-223	Vincent Gulf Service Station/Hess	1801 North Charles Street	Petroleum release

Table V-21: High Priority Hazardous Material Sites near the Existing B&P Tunnel

Site ID #	Property Description	Address	Hazard Type
BP-077	JJ Adams Fuel Oil Company	1810 Winchester Street	Petroleum use
BP-091	Western District Police Station	1034 North Mount Street	Petroleum release
BP-118	Gilmor Elementary School #107	1311 North Gilmor Street	Petroleum release
BP-157	Bank of America	1808 Pennsylvania Avenue	Petroleum release
BP-178	Lafayette Center	1915 Madison Avenue	Petroleum remediation
BP-184	Midtown Development Corporation	1820 Eutaw Place	Petroleum release
BP-185	Conor residence	1815 Madison Avenue	Petroleum release
BP-195	Eutaw-Marshburn Elementary School	1624 Eutaw Place	Petroleum use
BP-201	Ditch Bowers & Taylor, Inc.	415 West North Avenue	Petroleum release, Railway history
BP-224	Amtrak Pennsylvania Station	1500 North Charles Street	Petroleum release, Railway history
BP-226	Norfolk Railway Yard	340 West North Avenue	Petroleum release, Railway history

a. Field Samples

Soil cuttings associated with an ongoing geotechnical field investigation were screened for various volatile, semi-volatile petroleum, and metals constituents across the build alternatives. The updated evaluation reviewed sampling data collected between March 2014 and May 2016. A total of 36 soil samples were collected from 24 boring locations within three depths of interest: shallow surficial soils, water-table and tunnel construction up to auger refusal (see **Figure V-21, Figure V-22, and Figure V-23**).

Shallow soils were cleared to a depth of 5 to 10 feet below ground surface (bgs) at all locations using an air lance and vacuum extraction system. All borings were installed by a truck-mounted drill rig with hollow-stemmed augers. The drill rig borings were installed to depths ranging from 2.5 to 74 feet below ground surface, based on the anticipated limits of disturbance. All soil cuttings were screened with a photoionization detector (PID) for potential volatile organic compounds (VOCs). Upon completion of the soil borings, all full depths of the borings were backfilled and grouted.

Laboratory analysis found contaminant concentrations of all soil samples at levels below MDE non-residential cleanup standards for non-residential development, except for sampled concentrations of arsenic at 16 locations and lead at one location. Of the 16 reported arsenic exceedances, only three exceeded the anticipated typical concentration for arsenic in central Maryland of 4.9 mg/kg, and all were within an order of magnitude of the screening limit of 1.9 mg/kg. The arsenic concentrations should be further evaluated during final design and construction for toxicity characteristic leaching procedure (TCLP) arsenic levels and addressed as a hazard if concentrations exceed the 40 CFR 261.24 hazardous waste toxicity threshold limits to determine if soils excavated from this area should be handled as hazardous waste. The lead concentration of 1,130 mg/kg at TA-P2-3 (10-10.5 ft. bgs) exceeds the MDE non-residential clean-up standard of 1,000 mg/kg and no obvious source has been identified in the area (see **Figure V-23**). No surface features are proposed for this area, but should surface-construction work proceed in the vicinity of TA-P2-3, soil screening should include testing for TCLP lead to determine if concentrations in soils excavated from this area should be handled as hazardous waste.

b. Surface Installations

The location of Intermediate Ventilation Facility, portal ventilation facilities and the tunnel portals were not defined during the DEIS hazardous materials assessment. Due to the anticipated depths and large quantity of surface material that will be disturbed during construction, these construction areas are of particular concern when evaluating potential human health, environmental, and community risks.

The preferred Intermediate Ventilation Facility site (for all build alternatives) would be located approximately 2,300-feet west of the Penn Station portal (see **Figure V-23**). Eight low-priority sites are located within 500-feet of the proposed Intermediate Ventilation Facility, including: Wonder Cleaners & Tailors (BP-163), Lee Sun F (BP-165), Crown Station (Quest Station) (BP-168), Cove One Hour Cleaners (BP-169), Snow White Self Service Laundry (BP-170), Fish Dry Cleaning & Laundry Co. (BP-172), VI Contracting Site (BP-174), and Minor's Cleaners (BP-179). Three of the sites, Minor's Cleaners, Cove One Hour Cleaners, and Fish Dry Cleaning & Laundry Co. are collocated within the proposed Intermediate Ventilation Facility site boundaries. Based on the historical presence of several dry cleaning facilities, heating oil tanks, and a gas station, excavated soil and groundwater from the Intermediate Ventilation Facility should be screened for chlorinated solvents, halogenated solvents, and petroleum constituents during final design and construction using a combination of field screening techniques and laboratory analysis.

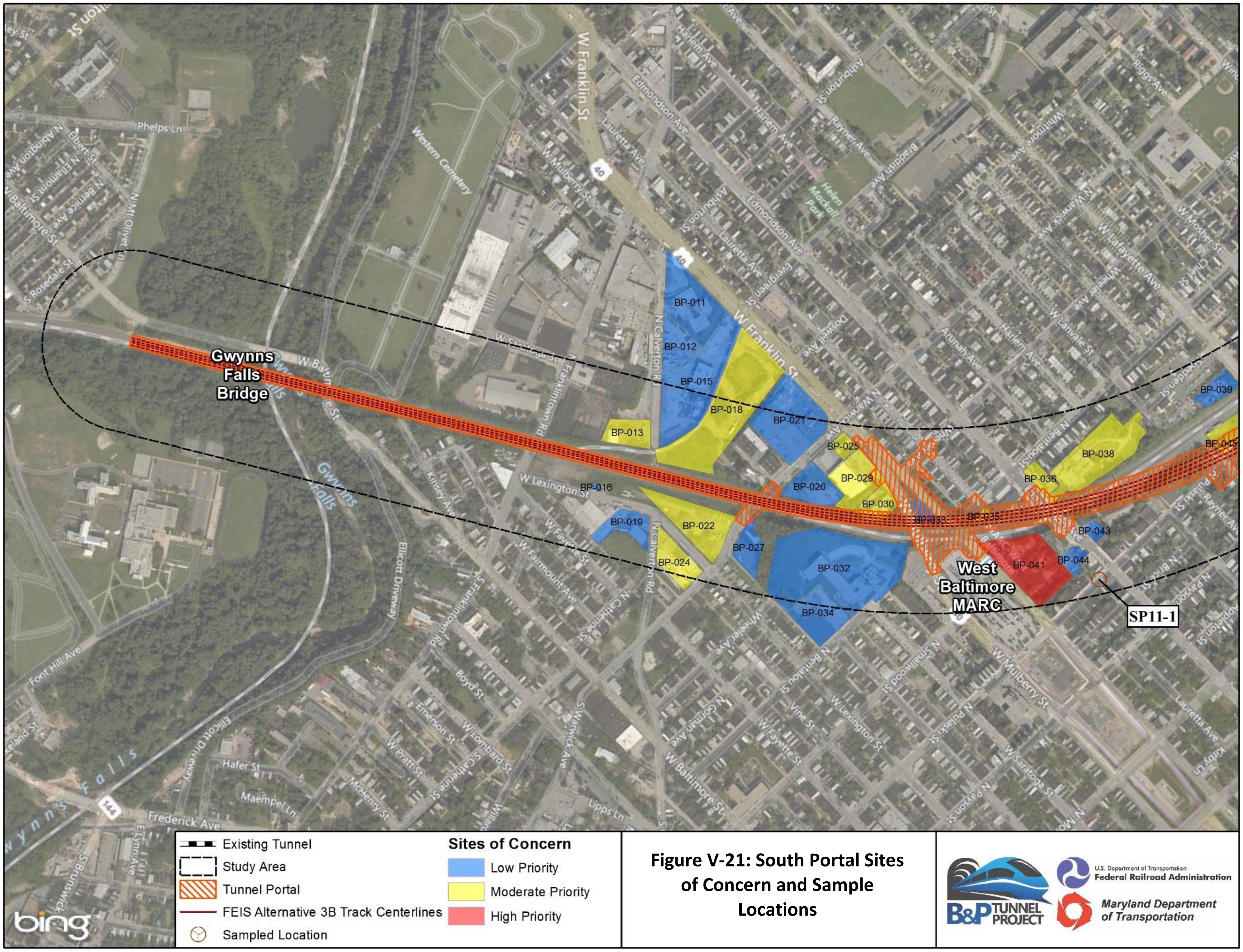


Figure V-21: South Portal Sites of Concern and Sample Locations

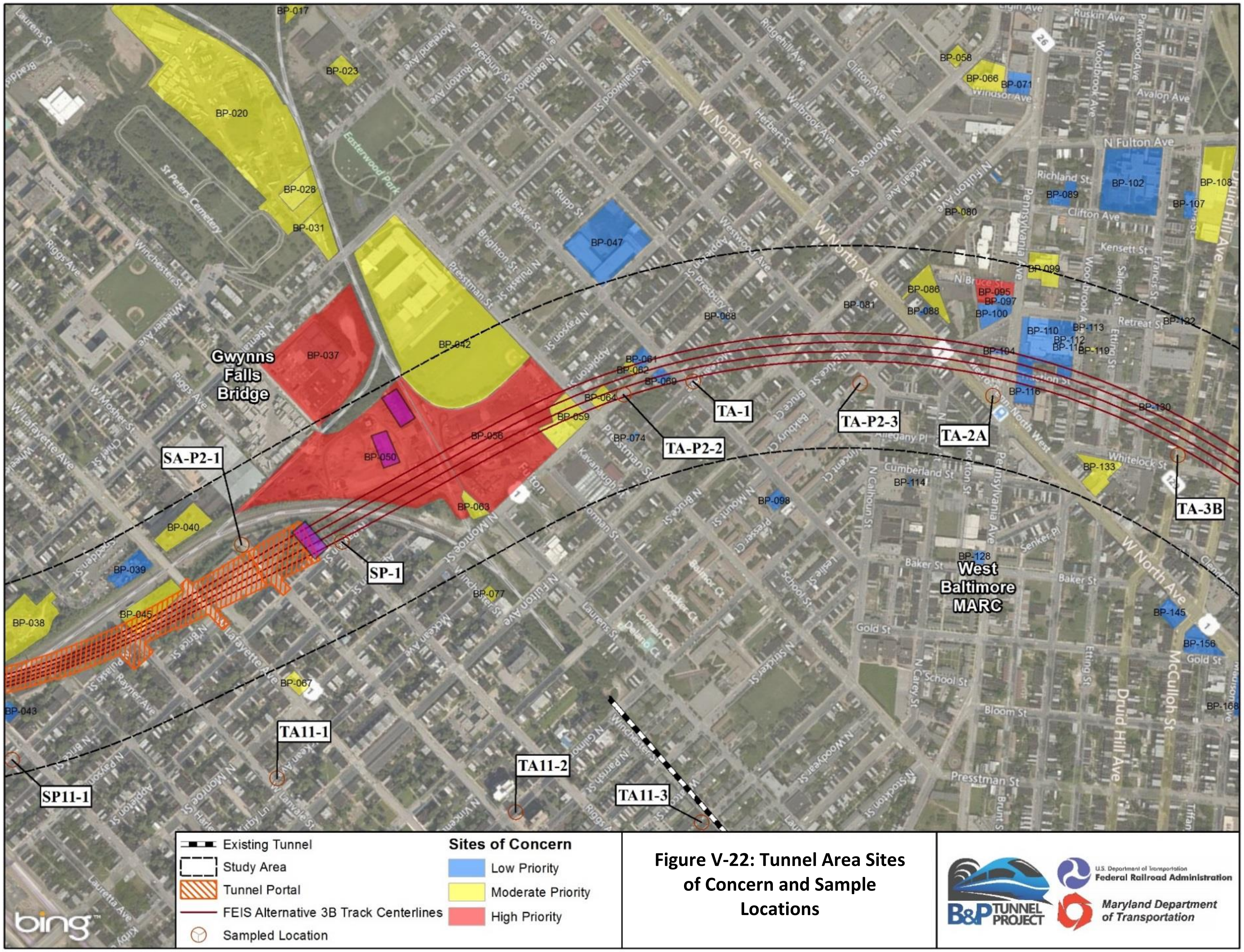


Figure V-22: Tunnel Area Sites of Concern and Sample Locations

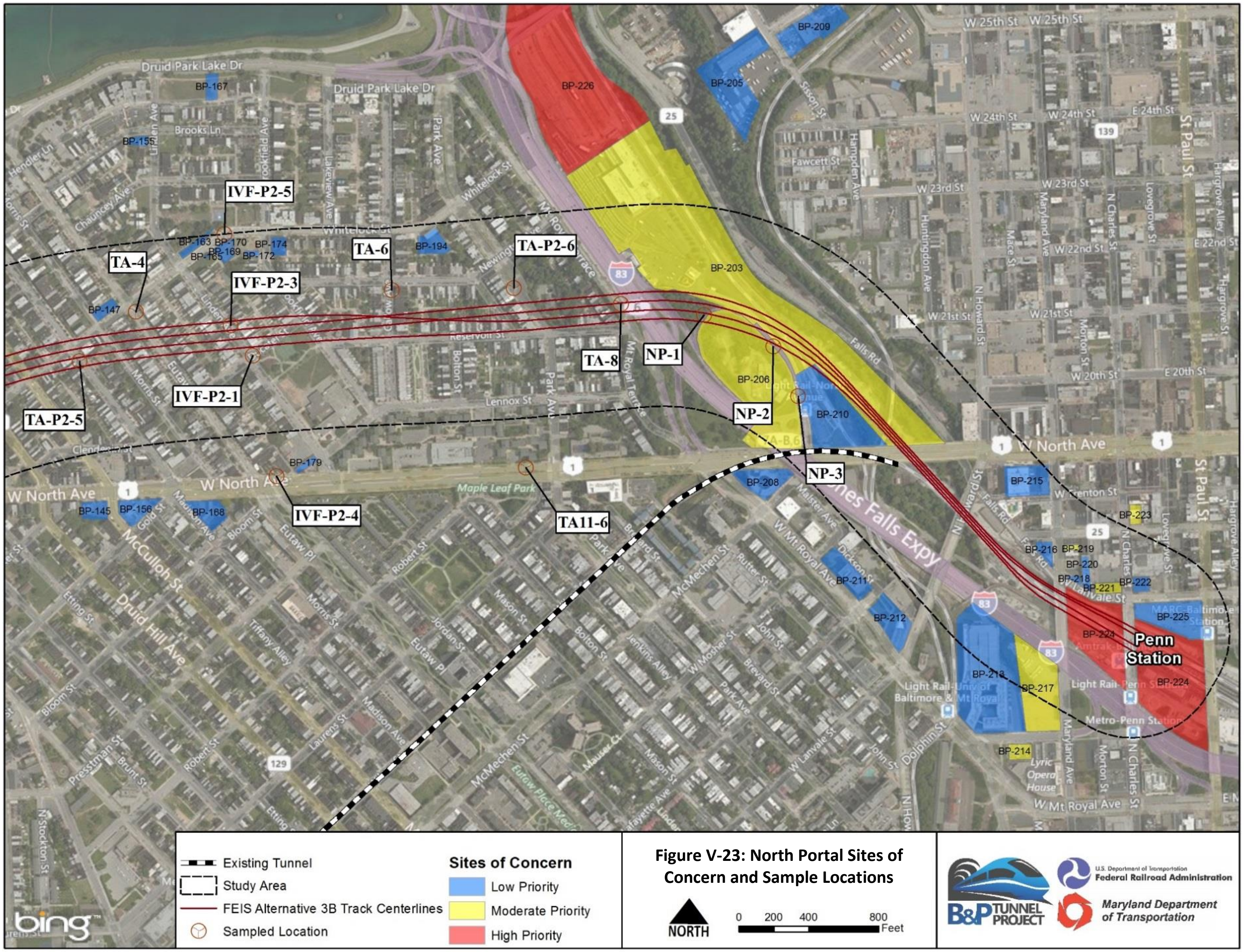


Figure V-23: North Portal Sites of Concern and Sample Locations

The North Ventilation Facility (for all build alternatives) would be located near the western portion of the Penn Station portal (see **Figure V-23**), while the South Ventilation Facility for the Preferred Alternative would be located near the northern terminus of the Gwynns Falls Bridge portal (see **Figure V-21**). Three moderate-priority sites, Norfolk Railway Yard (Hollin Yard) – BP-203, Baltimore City DPW Highway Maintenance Garage – BP-206, and the MTA Light Rail Maintenance Facility – BP-210, as well as one low priority property (Lincoln Motor, co-located at BP-210) are located within 500 feet of the Penn Station portal (North Portal) ventilation facility. Based on the historical rail and vehicle maintenance use of the underlying and surrounding properties, soils and groundwater disturbed during construction should be screened for petroleum constituents, hydraulic fluids, polychlorinated biphenyls (PCBs), chlorinated solvents, cadmium, mercury, and benzene.

Sites of concern within 500 feet of the Gwynns Falls Bridge portal ventilation facilities include three high-priority sites (ABEX Baltimore/ABC Rail Products Corp. – BP – 037, Matrix Metals – BP-050, and Baltimore Asphalt Paving Company – BP-056) and three moderate-priority parcels (Emmanuel Tire (Acme Business Park) – BP-040, Carver Vocational-Technical High School – BP-042, and E.S. Brady & Co., Inc. – BP-063). Two of the proposed portal ventilation facility footprints are located within the Baltimore Asphalt Paving Company Parcel, a site conducting significant petroleum, halogenated solvent, and corrosives storage and handling. In addition, the surrounding properties have a history of heavy industrial use, including the use of hydraulic fluids, PCBs, arsenic, mercury, metals, petroleum products, and polycyclic aromatic hydrocarbons (PAHs). Soils and groundwater disturbed during construction should be screened for petroleum constituents, hydraulic fluids, polychlorinated biphenyls (PCBs), chlorinated solvents, cadmium, mercury, and benzene.

G. Solid Waste

The regulations of the EPA under the Resource Conservation and Recovery Act (RCRA), MDE under COMAR Title 26.04.07, and the Baltimore City Department of Public Works (Bureau of Solid Waste) under Baltimore County Code Article 13 Title 04, govern activities that involve the generation, handling, and disposal of solid wastes.

Currently, solid waste generation from the existing B&P Tunnel comes from activity surrounding maintenance of the structure (worker trash, worker equipment, general debris from the existing structure) and fugitive trash from the City streets above.

Wastes containing contaminated materials require special handling, storage, transportation, and disposal methods to prevent releases that could impact human health or the environment. Depending on the nature of the material, federal, state and municipal regulations require the use of special containers or stockpiling practices for on-site storage to prevent the release of contaminated materials. The Federal and State Departments of Transportation have requirements for transportation of wastes containing contaminated materials. Facilities that receive contaminated materials require federal, state, and municipal permits to accept the waste, and generally require specific representative waste sampling and laboratory analysis prior to accepting material for disposal.

Two types of landfills that accommodate solid waste from projects like the B&P Tunnel are Rubble (Construction & Debris [C&D]) Landfills and Land Clearing Debris Landfills. A rubble (C&D) landfill is a solid waste acceptance facility that is restricted to accepting waste derived from building construction, demolition, or remodeling. As of 2013, there were five permitted rubble landfills in the state and one more under construction. At the 2013 disposal rate, there would be approximately 25 years of available C&D landfill capacity in the state. Land clearing debris (LCD) landfills are solid waste acceptance facilities that are restricted to acceptance of earthen materials such as clays, sands, topsoil, rock, and vegetation. As of 2013, there were five permitted LCDs accepting solid waste and one more under construction. At the 2013 disposal rate, there would be approximately 58 years of available land clearing debris landfill capacity in Maryland (Waste Diversion and Utilization Program, 2015).

H. Air Quality

Air quality describes the level of pollutants in the air. Individual air pollutants degrade the atmosphere and can harm human or animal health, reduce visibility, damage property, and reduce productivity of crops or natural vegetation.

Pursuant to the requirements of the Clean Air Act (CAA), the EPA establishes, enforces, and periodically reviews the National Ambient Air Quality Standards (NAAQS) for six common air pollutants, referred to as criteria pollutants--carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ozone, sulfur dioxide (SO_2), and particulate matter (PM) which includes particulate matter with a diameter of ten microns or less (PM_{10}) and particulate matter less than or equal to 2.5 micrometers ($PM_{2.5}$).The MDE has adopted the same standards as the NAAQS.

The EPA designates areas as either meeting (attainment) or not meeting (nonattainment) the NAAQS. An area with measured pollutant concentrations lower than the NAAQS is designated as an attainment area and an area with pollutant concentrations that exceed the NAAQS is designated as a nonattainment area. Once a nonattainment area meets the NAAQS and the additional redesignation requirements in the CAA, the EPA will designate the area as a maintenance area. Ozone nonattainment areas are further classified as extreme, severe, moderate, or marginal.

The CAA requires states to develop a general plan to attain and/or maintain the primary and secondary NAAQS in all areas of the country and to develop a specific plan to attain the standards for each area designated nonattainment for a NAAQS. These plans, known as State Implementation Plans (SIPs), are developed by state and local air quality management agencies and submitted to the EPA for approval.

The General Conformity Rule of the federal CAA prohibits federal agencies (such as FRA) from permitting or funding projects that do not conform to an applicable SIP. The General Conformity Rule applies only to areas that are in nonattainment or within a maintenance status. Under the Rule, project-related emissions of the applicable nonattainment/maintenance pollutants are compared to *de minimis* level thresholds. If the emissions exceed the thresholds, a formal Conformity Determination is required to demonstrate that the action conforms to the applicable SIP. Conversely, if project-related emissions are below the *de minimis* levels the project is assumed to conform to the SIP. The proposed Project would require input and/or approval by the FRA; therefore, the General Conformity requirements of the CAA are applicable. The General Conformity *de minimis* levels for the B&P Tunnel Replacement Project are presented in **Table V-22**.

Table V-22: General Conformity *de minimis* Thresholds (tons per year)

Pollutant	Primary/ Secondary (tons per year)	Area Designation
Ozone (NO_x)	100	Marginal and moderate nonattainment inside an ozone transport region
Ozone (VOC)	50	Marginal and moderate nonattainment inside an ozone transport region
$PM_{2.5}$	100	All nonattainment & maintenance areas

Note: Ozone thresholds are for locations inside an Ozone Transport Region (OTR).

Source: US EPA, De-Minimis Levels, http://www.epa.gov/oar/genconform/deminimis.htm

The B&P Tunnel Project is located in Baltimore City, Maryland, which is presently designated by the EPA as a moderate nonattainment area for the eight-hour ozone, and a maintenance area for $PM_{2.5}$. Although a portion of Baltimore City is designated as a maintenance area for CO, the B&P Tunnel project is located outside of the maintenance area. The existing B&P Tunnel operations data for 2014 is summarized in **Table V-23**. Additional information regarding air quality of the Study Area can be found in the *Air Quality Technical Report* and the *Noise and Air Quality Technical Memorandum for Ventilation Plants*.

Table V-23: Tunnel Operating Characteristics in the Existing Year (2014)

Train Service	Locomotive Type	Total Bi-directional Frequencies		Consist Data		Speed N/S* (mph)
		Daily	Peak Hour	Number of Locos	Number of Cars	
MARC (Regional)	Diesel (~60%) & Electric (~40%)	57	4	1	8	30/30
Acela (Intercity Express)	Electric	39	2	1	8	30/30
NE Regional (Intercity Corridor)	Electric	49	3	1	8	30/30
Freight	Diesel	2	0	1	30	30/30
Total	**All**	**145**	**9**			

** Average train speed entering and exiting the North Portal (N) and South Portal (S).*
Source: General Orders Timetable (Amtrak, December 2012 and 2014).

Background concentrations accounting for existing nearby emissions sources were included in ventilation system air dispersion modeling. The background concentration was obtained from the nearby EPA monitoring station located in the Oldtown Fire Station at 100 Hillen Street in Baltimore, which is approximately 1.5 miles from the project. Following US EPA guidance, the 1-hour NO_2 background concentration was based on the most recent (i.e., 2013 through 2015) three-year average of the 98th percentile of the daily 1-hour maximum value, which equals 51 ppb.

Historically, Greenhouse Gas (GHG) emissions have not been regulated under the CAA as air pollutants. However, after the US Supreme Court clarified in 2007 that CO_2 is an "air pollutant" subject to regulation under the CAA, the EPA embarked on developing requirements and standards for GHG emissions from mobile and stationary sources. However, there are no current NAAQS or *de minimis* thresholds in place for GHG.

In February 2010, the CEQ released a draft guidance memorandum addressing the ways federal agencies can improve their consideration of the effects of GHG emissions and climate change in their evaluation of proposals for federal actions under NEPA (CEQ, 2010). On December 2014, CEQ released revised draft guidance which supersedes the guidance released in February 2010. The revised guidance explained that agencies should consider both the potential effects of a proposed action on climate change, as indicated by its estimated GHG emissions, and the implications of climate change for the environmental effects of a proposed action. The guidance also emphasized that agency analyses should employ quantitative or qualitative analytical methods to ensure useful information is available to inform the public and the decision-making process in distinguishing between alternatives and mitigations. CEQ recommends that agencies consider 25,000 metric tons of carbon dioxide equivalent (CO_{2e}) emissions on an annual basis as a reference point below which a quantitative analysis of GHG is not recommended unless it is easily accomplished based on available tools and data (CEQ, 2015). The CEQ released final GHG guidance in August 2016.

I. Noise

FRA has adopted FTA's Noise and Vibration Impact Assessment guidelines. According to the FTA, noise is generally considered unwanted sound.[1] Transit noise impacts are assessed based on land use categories and sensitivity to noise from transit sources (see **Table V-25**) under FTA's guidance manual, *Transit Noise and Vibration Impact Assessment.* The FTA noise criteria are delineated into two categories: *moderate* and *severe* impact. The moderate threshold defines areas where the change in noise is noticeable but may not be sufficient to cause a strong, adverse community reaction. The *severe* impact threshold defines the noise limits above which a significant percentage of the population would be highly annoyed by new noise. The level of impact at any specific site is established by comparing the predicted future Project noise level at the site to the existing noise level at the site.

Various sound metrics are used to quantify noise from transit sources. The A-weighted decibel (abbreviated "dBA") is used to describe the overall noise level and closely matches the human ear's response to audible frequencies. The following A-weighted noise metrics are used to describe impacts from transit related sources:

- L_{max}: The maximum noise level that occurs during an event (such as a train passby);
- L_{eq}: The equivalent sound level, which is the level of constant noise with the same acoustical energy as the fluctuating noise levels observed during a given time interval (such as one hour); and
- L_{dn}: The 24-hour day-night average sound level, an average sound level which includes a 10-decibel penalty added between 10:00 pm and 7:00 am to account for greater nighttime sensitivity to noise.
- SEL: The sound exposure level that converts the cumulative noise energy of an event into one second.

The L_{dn} is used to characterize noise exposure for residential areas (FTA Category 2). The L_{dn} metric describes a receiver's cumulative noise exposure from all events over 24 hours. For other noise-sensitive land uses such as schools and libraries (FTA Category 3) and outdoor amphitheaters (FTA Category 1), the average hourly equivalent sound level L_{eq}(h) is used to represent the peak operating hour. See **Table V-24** for FTA land use categories and noise metrics.

Potential noise impacts from the B&P Tunnel Project were also evaluated using the noise level standards included in the Noise Regulation of the Health Code of Baltimore City.[2] This regulation provides the noise limits for manufacturing, commercial, and residential zones in Baltimore City—depending on the source of noise and the types of adjacent land uses. For noise generated within residential zones, there is a limit of 55 dBA at any point on the property line of the use (the noise limit is described as a measured maximum sound level; although not specifically stated, it is assumed to be in terms of L_{max}). Between 9:00pm and 7:00am, the limit is five dBA lower for any uses within a residential zone (that is, 50 dBA). Although the Health Code allows for different noise limits for "short, durational deviations," for the purposes of this report, it is assumed that the noise limit for the ventilation facilities is L_{max} 50 dBA at the property boundary of each ventilation plant facility. Additionally, regulations from COMAR 26.02.03—Control of Noise Pollution, were applied, as appropriate, to the impact evaluation.

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[1] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, Washington, DC, May 2006.

[2] Health Code of Baltimore City, § 9-206 Noise Regulation, 2015.

Table V-24: FTA Land Use Categories and Noise Metrics

Land-Use Category	Noise Metric	Description
1	$L_{eq}(h)$	Tracts of land set aside for serenity and quiet, such as outdoor amphitheaters, concert pavilions, and historic landmarks.
2	L_{dn}	Buildings used for sleeping such as residences, hospitals, hotels, and other areas where nighttime sensitivity to noise is of utmost importance.
3	$L_{eq}(h)$	Institutional land uses with primarily daytime and evening uses including schools, libraries, churches, museums, cemeteries, historic sites, and parks, and certain recreational facilities used for study or meditation.

Source: Transit Noise and Vibration Impact Assessment (FTA, 2006).

A noise monitoring program was conducted at three representative locations near the south portal on May 14th and May 28th, 2015. Measurements near the north portal were not available due to the lower density of noise sensitive receptors and the farther distances between the railroad lines and noise sensitive receptors (compared to the south portal where actual measurements were taken). As a result, existing noise levels were estimated using tabulated values from the FTA's General Noise Assessment guidelines. Based on FTA's guidelines, these tabulated values were significant underestimates intended to compensate for the reduced precision of the estimated values compared to measured values. This conservative approach to estimating background levels "casts a larger net (i.e., larger contour)" when estimating the number of impacted receptors, which means that the estimate may overestimate the impacts of the Project. At this location, existing noise levels were estimated based on proximity to major roads, such as I-83, and existing railroad lines. The noise measurements documented existing noise sources within the Study Area, such as rail traffic (including passenger and freight traffic along the NEC) and motor vehicle traffic along surface streets. As shown in **Table V-25**, measured peak-hour noise levels near the south portal ranged from 64.3 dBA to 70.3 dBA, and the measured day-night noise levels range from 63.2 dBA to 64.7 dBA. The estimated noise levels near the north portal are 60.0 dBA for both the peak-hour and day-night noise levels. More detailed information regarding noise within the Study Area can be found in the *Noise Technical Report* and the *Noise and Air Quality Technical Memorandum for Ventilation Plants*.

Table V-25: Existing Noise Levels

Receptor Location	FTA Land Use Category	FTA Description	Peak Hour $L_{eq}(h)$ (dB)	24-Hour L_{dn} (dB)
Near South Portals *(Measured)*				
N Mount Street	2	Residential	N/A	64.7
W Lanvale Street	2	Residential	N/A	63.4
Mary Ann Winterling Elementary School	3	Institutional	64.3	N/A
Near North Portals *(Estimated)*				
Residential and Institutional receptors in vicinity of the Project	2 and 3	Residential and Institutional	60.0	60.0

Source: Study Team conducted noise measurements near the South Portals on May 14th and May 28th, 2015. North Portal data are estimates based on FTA's Transit Noise and Vibration Impact Assessment (FTA, 2006).

J. Vibration

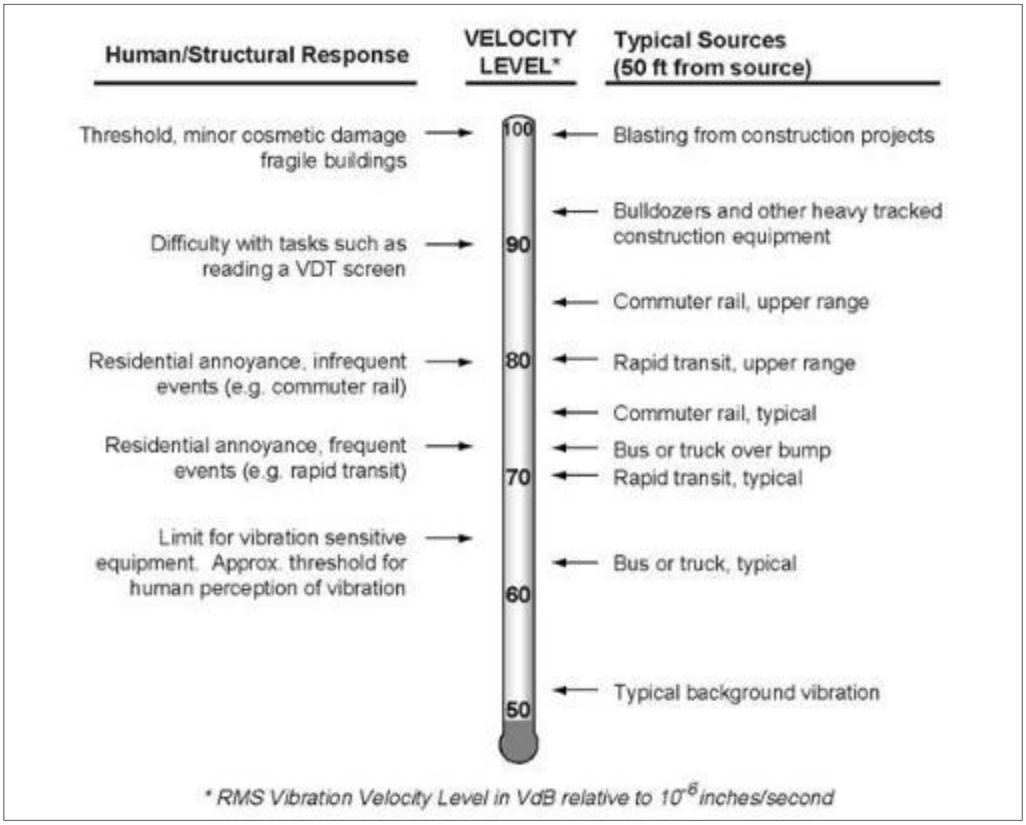
Because FRA has not published noise and vibration regulations, the agency defers to guidance published by the FTA. The vibration assessment was prepared in accordance with NEPA and the guidelines set forth by FTA's *Transit Noise and Vibration Impact Assessment* (FTA, 2006). The future predicted vibration levels from the B&P Tunnel Project were evaluated using the FTA guidelines. The FTA criteria are used to evaluate instantaneous levels from single events (such as a single train passby).

1. Technical Overview

Typical ground-borne vibration levels, in addition to typical sources and human/structural responses, are shown in **Figure V-24**.

Ground-borne vibration associated with vehicle movements is usually the result of uneven interactions between wheels and the road or rail surfaces. Examples of such interactions (and subsequent vibrations) include train wheels over a jointed rail and an untrue rail car wheel with flats spots. Typical ground-borne vibration levels at a receptor 50 feet from a diesel locomotive traveling at 50 miles per hour is 85 VdB and 73 VdB for LRT vehicles. Similarly, a typical background vibration velocity level in residential areas is usually 50 VdB or lower, well below the threshold of human perception, which is around 65 VdB. Typical background levels refer to ambient ground vibrations not related to any specific transportation source (e.g., naturally occurring ground vibration). This background vibration level is assumed to be fairly constant from site to site, except near active fault lines.

Figure V-24: Typical Ground-Borne Vibration Levels (FTA, 2006)


Human/Structural Response
VELOCITY LEVEL*
Typical Sources (50 ft from source)
Threshold, minor cosmetic damage fragile buildings
100
Blasting from construction projects
Bulldozers and other heavy tracked construction equipment
Difficulty with tasks such as reading a VDT screen
90
Commuter rail, upper range
Residential annoyance, infrequent events (e.g. commuter rail)
80
Rapid transit, upper range
Commuter rail, typical
Residential annoyance, frequent events (e.g. rapid transit)
Bus or truck over bump
70
Rapid transit, typical
Limit for vibration sensitive equipment. Approx. threshold for human perception of vibration
Bus or truck, typical
60
Typical background vibration
50
* RMS Vibration Velocity Level in VdB relative to 10-6 inches/second

Unlike noise, which travels in air, transit vibration typically travels along the surface of the ground. Depending on the geological properties of the surrounding terrain and the type of building structure exposed to transit vibration, vibration propagation can be more or less efficient. Buildings with a solid foundation set in bedrock are "coupled" more efficiently to the surrounding ground and experience relatively higher vibration levels than buildings located in sandier soil. Heavier buildings (such as masonry structures) are less susceptible to vibration than wood-frame buildings because they absorb more vibration energy.

Vibration induced by passing rail vehicles can generally be discussed in terms of displacement, velocity, or acceleration. However, human responses and responses by monitoring instruments and other objects are most accurately described with velocity; therefore, vibration velocity level is used to assess vibration impacts from transit projects.

2. Existing Vibration Levels

Baseline (or background) vibration measurements (vibration levels under Alternative 1) were not conducted as part of the B&P Tunnel Project because the focus of this preliminary phase is intended to compare the potential impacts between different alternatives and options. Typical background levels refer to ambient ground vibrations not related to any specific transportation source (e.g., naturally occurring ground vibration). This background vibration level is assumed to be fairly constant from site to site, except near active fault lines. Background vibration levels near the proposed B&P Tunnel Project alternatives are dominated by local traffic, while background vibration levels near the existing B&P Tunnel are dominated by current rail operations due to Amtrak, MARC, and freight train passbys along the NEC.

Ground-borne vibration from train passbys under Alternative 1 is predicted to exceed the FTA frequent impact criterion of 72 VdB at 23 residences and other FTA Category 2 land uses (see **Table V-25** for Land Use Categories). Exceedances of the FTA impact criterion of 75 VdB are predicted at one FTA Category 3 receptor (Eutaw-Marshburn Elementary School). No exceedances of the FTA ground-borne vibration impact criteria are predicted at any Category 1 land uses (highly sensitive equipment) under Alternative 1.

Vibration from train passbys in tunnels could contribute to ground-borne noise inside residences due to vibrating surfaces. Ground-borne noise from train passbys under Alternative 1 is predicted to exceed the FTA frequent impact criterion of 35 dBA at 126 residences and other FTA Category 2 land uses. Exceedances of the FTA impact criterion of 40 dBA are predicted at one FTA Category 3 receptor (Eutaw-Marshburn Elementary School). FTA Category 1 land uses (highly-sensitive equipment) are generally not sensitive to ground-borne noise. Additional information regarding vibration within the Study Area can be found in the *Vibration Technical Report.*

K. Energy

Consideration of energy consumption and conservation potential of alternatives and mitigation measures in EIS documents is required by CEQ guidance at 40 CFR Part 1502.16(e)—Environmental Consequences and FRA regulations. Amtrak and MARC trains traveling through the Study Area in the existing B&P Tunnel are electric or diesel powered, while NS freight trains are fueled primarily by diesel. Catenary lines provide overhead electric power to Amtrak and MARC trains along the trackway and through the existing B&P Tunnel in the Study Area.

Nationally, Amtrak trains use 2,214 Btu per passenger mile and traveling by Amtrak is 11 percent more efficient than domestic airline travel (2,484 Btu) and 31 percent more efficient than auto travel (3,193 Btu) on a per-passenger-mile basis (USDOE, 2014). In contrast, freight rail uses on average 13,800 Btu per freight-car-mile. Amtrak's goal is to reduce its consumption of diesel fuel by improving operating practices and conservation measures. Diesel fuel use in revenue-generating trains was reduced by 1.11 percent from Fiscal Year 2012 to 2013 (Amtrak, 2013).

Table V-26 presents the estimated daily energy consumption of Amtrak and MARC services through the Study Area based on NEC FUTURE 2014 data and statistics available from the National Bureau of Transportation Statistics. As discussed in the **Chapter II**, freight traffic through the existing B&P Tunnel is currently limited by the market forces, national government policy and the cost of track connections between the CSX and the NEC, resulting in most freight on the NEC being re-routed around the existing B&P Tunnel. As only two NS freight trains travel through the Study Area per day, their energy use is nominal.

Table V-26: Estimated Energy Consumption of Existing Amtrak and MARC Service in the Study Area

Type of Service	Daily Passenger Trips	Length of Travel (Miles)	Daily Passenger Miles	Average Btu Per Passenger-Mile	Daily Estimated Energy Consumption (Btu)
Amtrak	17,000[1]	3.5	59,500	2,214[1]	131,733,000
MARC	4,600[1]	3.5	16,100	2,838[2]	45,691,800

Source: NEC FUTURE (USDOT, Accessed September 8, 2014).

[1] 2014 data.

[2] 2012 data.

Energy is also consumed by the operation of facilities such as tunnels, where power is needed for lighting, trackway signage, and operating ventilation and safety equipment. Petroleum and electrical energy are also typically consumed during construction to operate various equipment.

Chapter VI

Environmental Consequences

VI. ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental impacts of the Preferred Alternative, Alternative 3A, and Alternative 3C in comparison to Alternative 1: No-Build. Since publication of the DEIS, Alternatives 3A, 3B and 3C were carried forward and further refined as described in **Chapter III**. In addition, FRA has identified Alternative 3B as the Preferred Alternative. Identification of the Preferred Alternative was based on the alternative's ability to meet the Project Purpose and Need; an assessment of engineering factors; an assessment of all environmental impacts; and consideration of all public and agency comments received. A detailed description of the Preferred Alternative, including descriptions of the alignment, ventilation facilities, construction methods and other Project components is provided in **Chapter IV**.

As described in **Chapter III**, each of the build alternatives (Alternatives 3A, 3B and 3C) were refined after the issuance of the DEIS in December 2015. The assessment in this chapter focuses on the environmental impacts of the Preferred Alternative (Alternative 3B), Alternative 3A, and Alternative 3C in comparison with the No-Build. The environmental impacts described in this chapter take into account any changes to environmental existing conditions which have been identified since the DEIS, and also reflect refinements to the alternatives that have occurred since the DEIS. Detailed resource impact mapping is located in **Appendix A**.

FRA has performed environmental impact analysis of the alternatives for the following resources: socioeconomics, cultural resources, Section 4(f), natural resources, hazardous materials, air quality, noise, vibration, and indirect and cumulative impacts. Direct, indirect, long term and short term impacts have been evaluated for each resource.

Because the majority of each build alternative would be below ground, impacts generally occur where the alignments intersect with the ground surface, such as at the portals and proposed ventilation facility locations in the east Jones Falls area, Reservoir Hill community along North Avenue, and Midtown-Edmondson neighborhoods. The Project design of the build alternatives no longer includes emergency egress at surface locations other than the ventilation facilities, therefore there would be no additional impacts resulting from egress areas, as were described in the DEIS.

A. Socioeconomics

1. Population

Population changes are estimated based on residential displacements and relevant Census data on average persons per household. Impacts to population are assessed in terms of general population characteristics including: age distribution, racial composition, educational level, poverty, and linguistic isolation.

See **Figure VI-1** for a depiction of the Preferred Alternative and Alternatives 3A and 3C in relation to Census tracts and block groups.

a. Alternative 1: No-Build

Alternative 1 would not require any residential displacements or impact the age distribution, racial composition, educational level, poverty, and linguistic isolation of the population of the Study Area.

b. Preferred Alternative

The Preferred Alternative would demolish an estimated 22 residential buildings. Based on data from Baltimore City, as well as field reconnaissance in May, 2016, it is estimated that 17 out of the 22 potentially impacted residential buildings are currently occupied (Baltimore City, 2016). Because relocation opportunities are available and could occur within or proximal to the impacted neighborhoods, minimal impact to the Study Area population is anticipated under the Preferred Alternative. Individuals relocated would experience temporary adverse effects from relocation.

c. Alternative 3A

Alternative 3A would not require the demolition of any residential structures and would have no direct impact on population.

d. Alternative 3C

Alternative 3C would require an estimated 12 residential building demolitions. Based on data from Baltimore City, as well as field reconnaissance in May, 2016, it is estimated that nine out of the 12 potentially impacted residential buildings are currently occupied. Because relocation opportunities are available and could occur within or proximal to the impacted neighborhoods, minimal impact to the Study Area population is anticipated. Individuals relocated would likely experience temporary adverse effects from relocation.

2. Housing

a. Alternative 1: No-Build

There would be no housing displacements or other impacts to housing as a result of Alternative 1.

b. Preferred Alternative

The Preferred Alternative would demolish 22 residential buildings in the Bridgeview/Greenlawn and Midtown-Edmondson neighborhoods as a result of south portal construction. Sixteen demolitions would occur west of North Payson Street and north of West Mosher Street; four demolitions would occur east of North Pulaski Street and south of West Lanvale Street; and two demolitions would occur west of North Bentalou Street and south of Lauretta Avenue. Based on Baltimore City Open GIS data and field review, five of the potentially impacted residential buildings are currently vacant (Baltimore City, 2016). None of the displacements are in publicly owned housing developments. Housing displacements are shown on the Environmental Resource Mapping in **Appendix A**.

Construction of the North Ventilation Facility and Intermediate Ventilation Facility are not anticipated to cause any housing displacements or have any other direct effects to housing. The South Ventilation Facility would be located above the cut-and-cover portion of the south portal; as such, the South Ventilation Facility itself would not result in any residential displacements beyond those required by the south portal construction.

c. Alternative 3A

Alternative 3A would have no direct impact to housing in the Study Area. No residential building demolitions would be required.

d. Alternative 3C

Alternative 3C would require demolition of 12 residential buildings in the Rosemont neighborhood. The demolitions would occur south of Edmondson Avenue between Wheeler Street and the NEC. Based on Baltimore City Open GIS data and field review, three of the potentially impacted residential buildings are currently vacant. None of the displacements are in publicly owned housing developments.

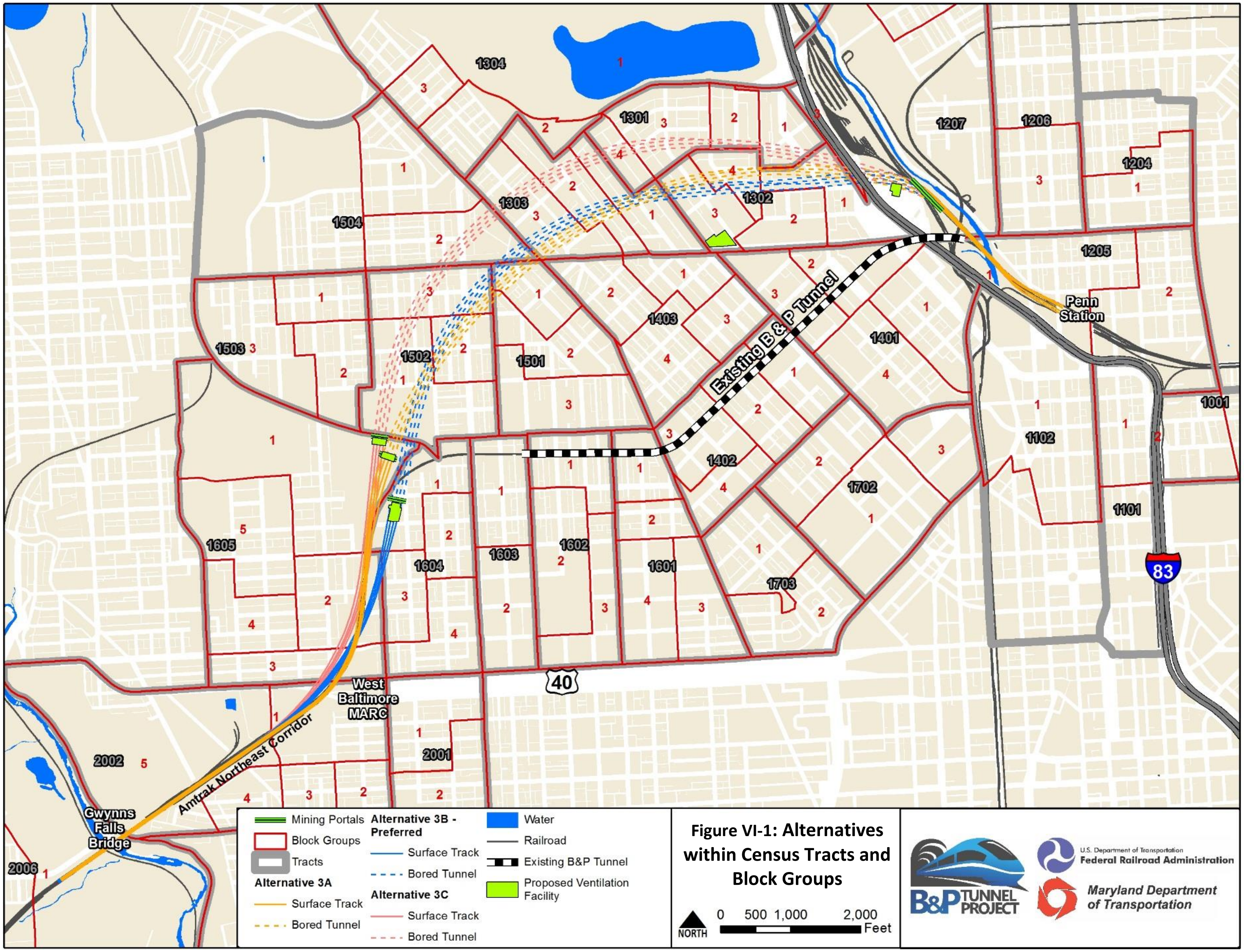


Figure VI-1: Alternatives within Census Tracts and Block Groups

3. Minority Race and Ethnicity and Low-Income Populations

The US Environmental Protection Agency has defined environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, signed by the President on February 11, 1994, directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law.

The US DOT has defined a “disproportionately high and adverse effect” on minority and low-income populations as an adverse effect that:

- Is predominantly borne by a minority population and/or a low-income population; or
- Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non- low-income population.

The identification of a disproportionately high and adverse effect on EJ populations does not preclude a project from moving forward. USDOT Order 5601.2a states that a project with disproportionately high and adverse effects on low-income and minority populations may be carried out under the following conditions:

- Programs, policies, and activities that would have a disproportionately high and adverse effect on minority populations or low-income populations would only be carried out if further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effects are not practicable. In determining whether a mitigation measure or an alternative is "practicable,” the social, economic (including costs) and environmental effects of avoiding or mitigating the adverse effects would be taken into account.
- Programs, policies or activities that would have a disproportionately high and adverse effect on populations protected by Title VI ("protected populations") would only be carried out if:
    (1) A substantial need for the program, policy or activity exists, based on the overall public interest; and
    (2) Alternatives that would have less adverse effects on protected populations (and still satisfy the need identified in subparagraph (1) above) have either:
        (a) adverse social, economic, environmental, or human health impacts that are more severe; or
        (b) would involve increased costs of an extraordinary magnitude.

Determinations of whether a project would have disproportionately high and adverse effects must take into consideration “mitigation and enhancement measures that will be taken and all offsetting benefits to the affected minority and low-income populations…” USDOT Order, Section 8.b.

This study incorporates the guidance provided in the *Environmental Justice Policy Guidance for FTA Recipients, FTA Circular 4703.1* (FTA, 2012). The FTA EJ Circular was published in 2012 to provide recipients of FTA financial assistance with guidance in order to incorporate EJ principles into plans, projects, and activities that receive funding from FTA.

a. Methodology

As a tool for evaluating the proportionality of beneficial and adverse effects, this analysis identifies EJ populations within the Study Area. Thresholds were used to identify EJ populations based on the Council on Environmental Quality (CEQ) guidance document, *Environmental Justice Guidance under NEPA* (CEQ, 1997). This approach was used in the DEIS, which identified EJ and non-EJ areas, based on the criteria described below.

An EJ population is defined to include any Census Block Group in which the minority or low-income population meets either of the following thresholds:

a) The minority or low-income population exceeds 50 percent, or

b) The percentage of minority or low-income population in the affected area is “meaningfully greater” than the percentage of minority or low-income population in the general population. (US Census Bureau Poverty Threshold for 2013 is $23,834 for a family of four).

For this study, “meaningfully greater” was defined as any Census Tract in which the percentage of minority or low-income population was at least 10 percentage points higher than the percentage of minority or low-income population of Baltimore City (the “general population”). Because the 2013 minority population of Baltimore City was 74 percent, the threshold of 50 percent or greater is used for minority population Block Groups (per the first threshold above). The percentage of low-income population in Baltimore City in 2013 was 22 percent, thus, Census Block Groups that contain 32 percent or higher low-income households are considered EJ populations (per the second threshold).

To determine whether effects would be disproportionately high and adverse to identified EJ populations, the analysis identifies the potential for adverse effects on human health and safety and environmental resources in the Study Area based on analysis of other environmental impacts identified in this FEIS. Those effects by alternative, geographic areas and type of effects are identified and determined whether they occur to EJ populations. When effects to EJ populations are identified, the effects experienced by the affected population are compared to those experienced by others residing in the entire project boundary.

Additionally, measures to avoid or reduce adverse effects and the benefits to minority and low-income populations are considered in making the determination of whether an effect is disproportionately high or adverse to EJ populations in the Study Area. Overall, of the 77 Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households (**Figure VI-2**).

Appendix D presents the minority race and/or ethnicity and low-income data for each Study Area Block Group. Two Block Groups meet the EJ population threshold for low-income composition only, and 38 Block Groups meet the EJ population threshold for minority race and/or ethnicity composition only; 34 Block Groups meet the threshold for both minority race and/or ethnicity as well as low-income composition. Three Study Area Block Groups do not meet the criteria for EJ populations: 1101.001, 1401.001, and 1401.002. This data is also represented in **Figure VI-2**. Therefore, of the 77 Block Groups within the Study Area, a total of 74 meet the criteria to be identified as EJ populations (minority and/or low-income).

All of the Census Block Groups proximal to the build alternatives are primarily occupied by minority and/or low-income populations and are therefore considered EJ populations. The following environmental resources are not directly, indirectly, or cumulatively impacted by the build alternatives: ecological resources, wetlands, water quality, flood hazards and floodplain management. Therefore, the lack of impacts to these resources would pose no disproportionately high and adverse effects to EJ populations in the Study Area and are not further discussed.

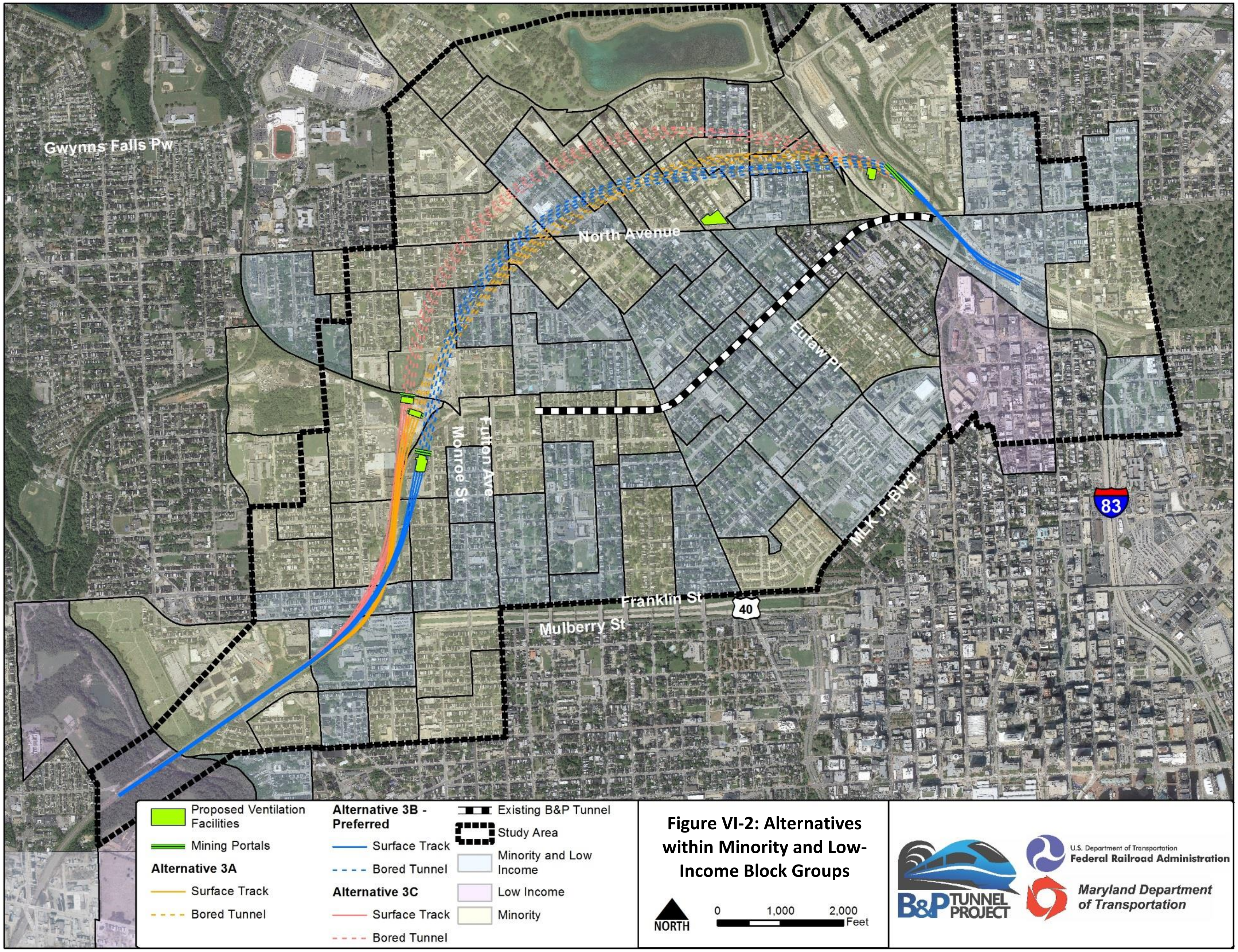


Figure VI-2: Alternatives within Minority and Low-Income Block Groups

FRA considered environmental impacts from the build alternatives for potential effects to low-income and minority populations as well as their potential for disproportionately high and adverse effects to these populations. Effects of the build alternatives are described based on the potential to disrupt community cohesion; change access to services, community facilities, and transportation; change the character and use of communities by land use changes or important cultural resource effects; impact quality of life through increased noise or vibration; or pose potential health issues such as changes to air quality or public safety. These effects may be beneficial or adverse.

Because the build alternatives are located only within EJ Block Groups, and the Study Area consists almost entirely of EJ Block Groups, the effects would be borne primarily by minority and low-income populations. The following discussion identifies the severity of potential effects and whether adverse effects may be mitigated. **Table VI-1** identifies the potential effects to low-income and minority communities for the Preferred Alternative, Alternative 3A and Alternative 3C.

Impacts to EJ populations were assessed by determining potential disruption in the interaction among people and groups within a community from the following:

- Possible displacements;
- Loss of housing and community facilities and access to services;
- Substantial change in land use;
- Creating physical barriers;
- Loss of important historic and archaeological resources;
- Visual quality changes;
- Transportation;
- Noise;
- Air quality;
- Vibration; and
- Impacts to public health.

FRA considered the displacements of households, businesses, and the loss of housing and community facilities for their potential to alter the physical shape, character, or function of communities or neighborhoods with predominately minority or low-income residents or use. The availability of suitable replacement housing and business locations was also examined.

Because temporary easements for construction purposes are anticipated to be relatively short term and would not preclude access to or impact major uses of a given property, potential effects during construction are not considered high or adverse to protected low-income and minority populations.

b. Alternative 1: No Build

There would be no negative impact to EJ populations from Alternative 1: No Build, in addition to no positive impact of improved transit times and capacity. Businesses and residences in EJ communities may experience negative effects if more frequent or intensive maintenance work is required in the future to maintain service through the existing tunnel, which could also result in potential delays or service interruptions on the NEC.

c. Preferred Alternative

The Preferred Alternative would improve transit times and reliable connections for transit-dependent residents in Midtown-Edmondson using the West Baltimore MARC station. Both platforms at the West Baltimore MARC Station would be improved to accommodate high-level boarding, improving accessibility at the station.

Construction of the project would benefit the local and regional economy, and mitigation measures are proposed to provide targeted local job training and encourage employment of workers of social and economic disadvantage.

Overall, the Preferred Alternative would have disproportionately high and adverse effects to EJ populations as a result of property acquisition and impacts to housing, land use/zoning, community facilities, visual quality, and noise. Impacts to property acquisition, housing, land use/zoning, community facilities, and visual quality would be more adverse within the Midtown-Edmondson neighborhood compared to other identified EJ populations, as a result of south portal construction and the South Ventilation Facility. The Preferred Alternative could have ground-borne noise impacts to EJ populations that would potentially be high and adverse, but minimization measures would be considered to reduce these to below high and adverse levels. Mitigation for the impacts to EJ populations are discussed in **Section VI.10,** as well as **Chapter VII**. **Table VI-1** describes impacts to EJ populations for the Preferred Alternative, Alternative 3A, and Alternative 3C.

d. Alternative 3A

Alternative 3A would not have a disproportionately high and adverse effect to EJ populations. The alternative would utilize existing NEC ROW for most of the south portal approach, thus minimizing the impacts to surrounding EJ populations as described in **Table VI-1**. This alignment does not require impacts to housing in EJ communities, minimizes the overall impact to businesses relative to the other alternatives, and avoids impacts to community facilities. Alternative 3A would improve transit service, but would not improve accessibility at the West Baltimore MARC Station. Construction of the project would benefit the local and regional economy, and mitigation measures are proposed to provide targeted local job training and encourage employment of workers of social and economic disadvantage. Alternative 3A could have ground-borne noise impacts to EJ populations that would potentially be high and adverse, but minimization measures would be considered to reduce these to below high and adverse levels. Overall, Alternative 3A would not have disproportionately high and adverse effects to EJ populations due to the minimized impacts and utilization of existing ROW.

e. Alternative 3C

Alternative 3C would have disproportionately high and adverse effects to EJ populations similar to those that would occur under the Preferred Alternative. The overall result of property acquisition and impacts to housing, land use/zoning, community facilities, and visual quality as described in **Table VI-1** would constitute a disproportionately high and adverse effect to the EJ communities found in the Midtown-Edmondson and Roselawn neighborhoods. Alternative 3C could have ground-borne noise impacts to EJ populations that would potentially be high and adverse, but minimization measures would be considered to reduce these to below high and adverse levels. Alternative 3C would improve transit service and accessibility at the West Baltimore MARC Station. Construction of the project would benefit the local and regional economy, and mitigation measures are proposed to provide targeted local job training and encourage employment of workers of social and economic disadvantage.

Table VI-1: Summary of Potential Effects to Low-Income and Minority Populations

Environmental Element	Alternative 1: No-Build Effect	Alternative 3A Effect	Preferred Alternative Effect	Alternative 3C Effect
Property Acquisition	No property acquisitions would occur. No disproportionately high and adverse effects to EJ populations would occur.	Alternative 3A would not result in any residential displacements. Nine businesses would be displaced. No disproportionately high and adverse effects to EJ populations would occur.	The Preferred Alternative would result in 22 residential property and 13 business displacements within EJ population areas. Disproportionately high and adverse effects would occur to EJ populations.	Alternative 3C would result in 12 residential and 16 business displacements within EJ population areas. Disproportionately high and adverse effects would occur to EJ populations.
Housing	No impacts to housing would occur. No disproportionately high and adverse effects to EJ populations would occur.	No housing units would be displaced by this alternative. No disproportionately high and adverse effects to housing within EJ populations would occur.	The Preferred Alternative would result in impacts to 22 residential buildings (no public housing impacts). Disproportionately high and adverse effects would occur to EJ populations from housing loss.	Alternative 3C would result in impacts to 12 residential buildings (no public housing impacts). Disproportionately high and adverse effects would occur to EJ populations from housing loss.
Land Use/Zoning	No impacts to land use/zoning would occur. No disproportionately high and adverse effects to EJ populations would occur.	1.4 acres of commercial land use would be converted to transportation in areas with EJ populations. No residential land use would be converted. No disproportionately high and adverse effects would occur.	3.9 acres of residential and commercial land uses would be converted to transportation use in areas with EJ populations. Disproportionately high and adverse effects would occur to land use/zoning.	2.4 acres of residential and commercial land uses would be converted to transportation use in areas with EJ populations. Disproportionately high and adverse effects would occur to land use/zoning.
Community Facilities	No impacts to community facilities would occur. No disproportionately high and adverse effects to EJ populations would occur.	No impacts to community facilities would occur. No disproportionately high and adverse effects would occur to community facilities in areas with EJ population.	Four places of worship in Midtown-Edmondson neighborhood would be displaced Disproportionately high and adverse effects would occur to community facilities in areas with EJ population.	The Charles R. Thomas Fire Station would be displaced. Disproportionately high and adverse effects would occur to community facilities in areas with EJ population.

Environmental Element	Alternative 1: No-Build Effect	Alternative 3A Effect	Preferred Alternative Effect	Alternative 3C Effect
Neighborhoods /Physical Barriers	No impacts to neighborhoods or implementation of physical barriers would occur. No disproportionately high and adverse effects to EJ populations would occur.	Alternative 3A would result in no new physical barriers in EJ communities because the alignment would be underground over most of its length. No disproportionately high and adverse effects from physical barriers would occur to EJ populations.	The Preferred Alternative would result in no new physical barriers in EJ communities because the alignment would be primarily underground, and new above ground alignment would be adjacent to the existing NEC. No disproportionately high and adverse effects from physical barriers would occur to EJ populations.	Alternative 3C would result in no new physical barriers in EJ communities because the alignment would be primarily underground, and new above ground alignment would be adjacent to the existing NEC. No disproportionately high and adverse effects from physical barriers would occur to EJ populations.
Visual Quality	No impacts to visual quality would occur. No disproportionately high and adverse effects to EJ populations would occur.	Alternative 3A would construct the south tunnel portal and South Ventilation Facility in a primarily industrial area and the Intermediate Ventilation Facility in the Reservoir Hill commercial area. FRA will work with the Reservoir Hill community and surrounding commercial stakeholders to develop a ventilation facility design that fits within existing community character and context. No disproportionately high and adverse effects to visual quality would occur in EJ population areas.	The Preferred Alternative would construct the south tunnel portal and South Ventilation Facility in the Midtown-Edmondson residential area. The Intermediate Ventilation Facility would be constructed along North Avenue within a commercial area, within the Reservoir Hill community. FRA will work with the Reservoir Hill community and surrounding commercial stakeholders to develop a ventilation facility design that fits within existing community character and context. Medium and adverse effects to EJ populations would occur from visual quality.	Alternative 3C would construct the south tunnel portal and South Ventilation Facility in the Midtown-Edmondson residential area and the Intermediate Ventilation Facility along North Avenue within its commercial corridor, within the Reservoir Hill community. FRA will work with the Reservoir Hill community and surrounding commercial stakeholders to develop a ventilation facility design that fits within existing community character and context. Medium and adverse effects to EJ populations would occur from visual quality.

Environmental Element	Alternative 1: No-Build Effect	Alternative 3A Effect	Preferred Alternative Effect	Alternative 3C Effect
Transportation	Minor impacts to roadway transportation would occur. However, no disproportionately high and adverse effects to EJ populations would occur.	Alternative 3A would improve transit times and reliable connections for transit-dependent residents in Midtown-Edmondson using the West Baltimore MARC station. Major existing crossings of the NEC would be maintained, however there may be short-term impacts during construction. No disproportionately high and adverse effects to EJ populations would occur from transportation effects.	The Preferred Alternative would improve transit times and reliable connections for transit-dependent residents in Midtown-Edmondson using the West Baltimore MARC station. Both platforms at the West Baltimore MARC Station would be improved to accommodate high-level boarding. Major existing crossings of the NEC would be maintained, however there may be short-term impacts during construction. No disproportionately high and adverse effects to EJ populations would occur from transportation effects.	Alternative 3C would improve transit times and reliable connections for transit-dependent residents in Midtown-Edmondson using the West Baltimore MARC station. Both platforms at the West Baltimore MARC Station would be improved to accommodate high-level boarding. Major existing crossings of the NEC would be maintained, however there may be short-term impacts during construction. No disproportionately high and adverse effects to EJ populations would occur from transportation effects.
Noise	No impacts to noise would occur. No disproportionately high and adverse effects to EJ populations would occur.	Alternative 3A would impact residential noise receptors within EJ population areas near the south portal. A total of 254 residential and institutional buildings would potentially experience moderate noise impacts. There would be no severe noise impacts. No disproportionately high and adverse effects to EJ populations would result from noise impacts.	The Preferred Alternative would impact residential noise receptors within EJ population areas near the south portal. A total of 297 residential and institutional buildings would potentially experience moderate noise impacts; 141 residential and institutional buildings would potentially experience severe noise impacts. Disproportionately high and adverse effects to EJ populations would occur from noise impacts.	Alternative 3C would impact residential noise receptors within EJ population areas near the south portal. A total of 979 residential and institutional buildings would potentially experience moderate noise impacts; 111 residential and institutional buildings would potentially experience severe noise impacts. Disproportionately high and adverse effects to EJ populations would occur from noise impacts.

Environmental Element	Alternative 1: No-Build Effect	Alternative 3A Effect	Preferred Alternative Effect	Alternative 3C Effect
Air Quality	No impacts to air quality would occur. No disproportionately high and adverse effects to EJ populations would occur.	Alternative 3A would have no impact to air quality. There would be no disproportionately high or adverse effects from air quality on EJ populations.	The Preferred Alternative would have no impact to air quality. There would be no disproportionately high or adverse effects to air quality on EJ populations.	Alternative 3C would have no impact to air quality. There would be no disproportionately high or adverse effects to air quality on EJ populations.
Vibration	No vibration impacts would occur. No disproportionately high and adverse effects to EJ populations would occur.	Alternative 3A would have 156 ground-borne noise impacts resulting from vibration. Disproportionately high and adverse effects to EJ populations would occur from ground-borne noise impacts.	The Preferred Alternative would have 449 ground-borne noise impacts resulting from vibration. Disproportionately high and adverse effects to EJ populations would occur from ground-borne noise impacts.	Alternative 3C would have 168 ground-borne noise impacts resulting from vibration. Disproportionately high and adverse effects to EJ populations would occur from ground-borne noise impacts.
Public Health and Safety	No impacts to public health and safety would occur. No disproportionately high and adverse effects to EJ populations would occur.	No impacts to public health and safety would occur. No disproportionately high and adverse effects to EJ populations would occur.	No impacts to public health and safety would occur. No disproportionately high and adverse effects to EJ populations would occur.	No impacts to public health and safety would occur. No disproportionately high and adverse effects to EJ populations would occur.

f. Evaluation of Effects

Determinations of whether a project would have disproportionately high and adverse effects must take into consideration "mitigation and enhancements measures that will be taken and all offsetting benefits to the affected minority and low-income populations…" USDOT Order 12898, Section 8.b.

The Project Team and FRA have determined that the Preferred Alternative and Alternative 3C would have disproportionately high and adverse effects to EJ populations. Alternative 3A would not have overall disproportionately high and adverse effects to EJ populations. In order to minimize and mitigate adverse effects where possible, a number of mitigation measures are included as part of the Preferred Alternative, which are discussed in Section **VI.A.10**, and in **Chapter VII**.

All of the project impacts, as well as the corresponding mitigation measures, would be located in predominantly low-income and minority population areas. The mitigation measures have been proposed to address, as completely as possible, all of the impacts to EJ populations resulting from the Project. Due to the permanent nature of the Project impacts, such as building demolitions and right-of-way acquisition in EJ communities, adverse effects to EJ populations would remain after mitigation. The proposed mitigation measures have been developed to address these impacts to EJ communities as completely as possible and enhance the surrounding environment to offset Project impacts. Further mitigation measures beyond those proposed could not completely eliminate adverse effects resulting from the Project.

g. Full and Fair Access

Executive Order 12898 requires that federal agencies ensure effective, meaningful involvement of low-income and minority populations in project planning and development and that potentially affected EJ populations have fair and equal access to information. Consequently, FRA and the Project Team have conducted an EJ public and agency outreach program throughout the EIS process and this outreach will continue through the design and construction phases. Meetings were held with the public, local officials; public, local, and regional organizations; and government agencies, as well as with representatives of affected EJ communities along the evaluated alternative alignments.

Three Public Open Houses, as well as 17 community meetings have been held since the project's Notice of Intent was published. At each meeting, the public was given the opportunity to learn about the project development in-person and directly ask questions and engage in discussion with the Project Team.

The Project Team also attended several local community association meetings with EJ populations to present information on the project and respond to questions in smaller, neighborhood-focused settings. The Project Team attended meetings with:

- Alliance of Rosemont Community Organizations (ARCO) on June 17, 2015, at St. Edwards RCC
- Western District Community Council Meeting on August 27, 2015 at First Mount Calvary Baptist Church;
- Reservoir Hill Improvement Council, Inc. (RHIC) on September 1, 2015, at John Eager Howard Recreation Center

Since publication of the DEIS, FRA held three Public Hearings on February 1 and February 6, 2016 at Frederick Douglass High School and February 17, 2016 at Carver Vocational-Technical High School. The Public Hearings provided an opportunity for the public to comment on the Project. Comment themes that arose from the Public Hearings and responses to these comments are described in **Chapter VIII.** The comments from each hearing can be found in **Appendix I.**

Two Public Open Houses were also held on April 6, and April 16, 2016 at Frederick Douglass High School and Carver Vocational-Technical High School respectively, to communicate details of the Preferred Alternative to the public. The Public Involvement team worked with the Baltimore City Department of Planning to identify additional community associations within the Study Area, and to verify any changes to community association representative contact information.

The Project Team also attended additional local community association meetings with EJ populations based on their requests: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter's Clavier Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School.

Direct mailings to residents in the Study Area expanded to include property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The project website continues to post meeting notices, project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship and other organizations.

4. Land Use and Zoning

Study Area land use and zoning are shown on **Figure VI-3** and **Figure VI-4**, respectively. The build alternatives would be bored to an average depth of 115 to 140 feet below the existing surface. As a result, surface land use impacts and zoning changes would be minimized and restricted to portal and ventilation facility locations.

The three build alternatives have similar proposed locations for the north portal. Construction of the north portal and North Ventilation Facility, on the east end of the build alternative alignments in the east Jones Falls area, would impact the Baltimore City Department of Transportation's North Avenue Facility Maintenance Yard. The north portal would pass below MTA's North Avenue Light Rail Station platform and/or adjacent tracks. The north portal would not cause a substantial land use change and would be consistent with existing land use and existing industrial zoning.

For all the build alternatives, a site located in the Reservoir Hill neighborhood at 900-940 West North Avenue is proposed for the Intermediate Ventilation Facility. The site is currently occupied by commercial businesses. As shown in **Figure VI-4**, the site is currently zoned as Community Business District (Baltimore Municipal Zoning Administration, 2015). For a comparison of environmental impacts from alternate ventilation facility sites considered, see **Section VI.P**.

Table VI-2 shows the calculated land use impacts specific to the Preferred Alternative, Alternatives 3A and Alternative 3C. The calculations include all land required by each alternative that is not in existing NEC right-of-way or city street right-of-way, including the North Ventilation Facility and Intermediate Ventilation Facility. The South Ventilation Facility would have no additional land use impact, beyond the conversion to transportation use required to construct the south portal, due to its location on the cut-and-cover portion above the south portal of the Preferred Alternative.

a. Alternative 1: No-Build

No changes to land use or zoning would occur as a direct result of Alternative 1: No-Build. Temporary construction impacts would also not occur under this alternative.

Table VI-2: Land Use Impacts

Land Use	Preferred Alternative (acres)	Alternative 3A (acres)	Alternative 3C (acres)
Residential	0.5	0.0	0.3
Industrial	2.6	2.4	6.1
Commercial	3.4	1.4	2.1
Transportation	5.8	5.4	5.9
Other	0.9	0.2	0.7
Total	**13.2**	**9.4**	**15.1**

Notes:
Other includes Undeveloped, Institutional, and Parks/Open space land uses.
Impact values do not include existing Amtrak ROW or existing street ROW.
Impact values include temporary and permanent construction impacts.
Intermediate Ventilation Facility impact values are included.

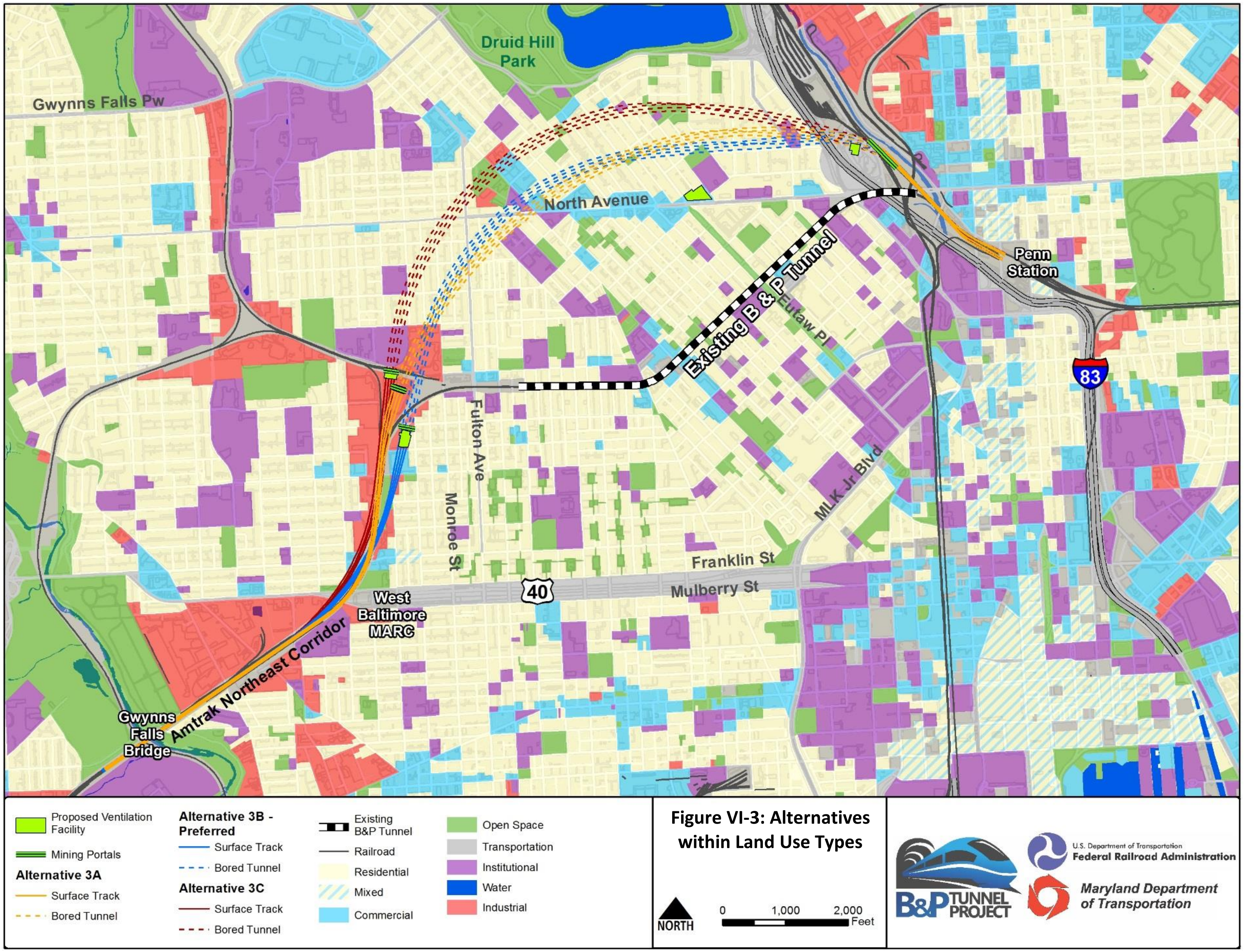


Figure VI-3: Alternatives within Land Use Types

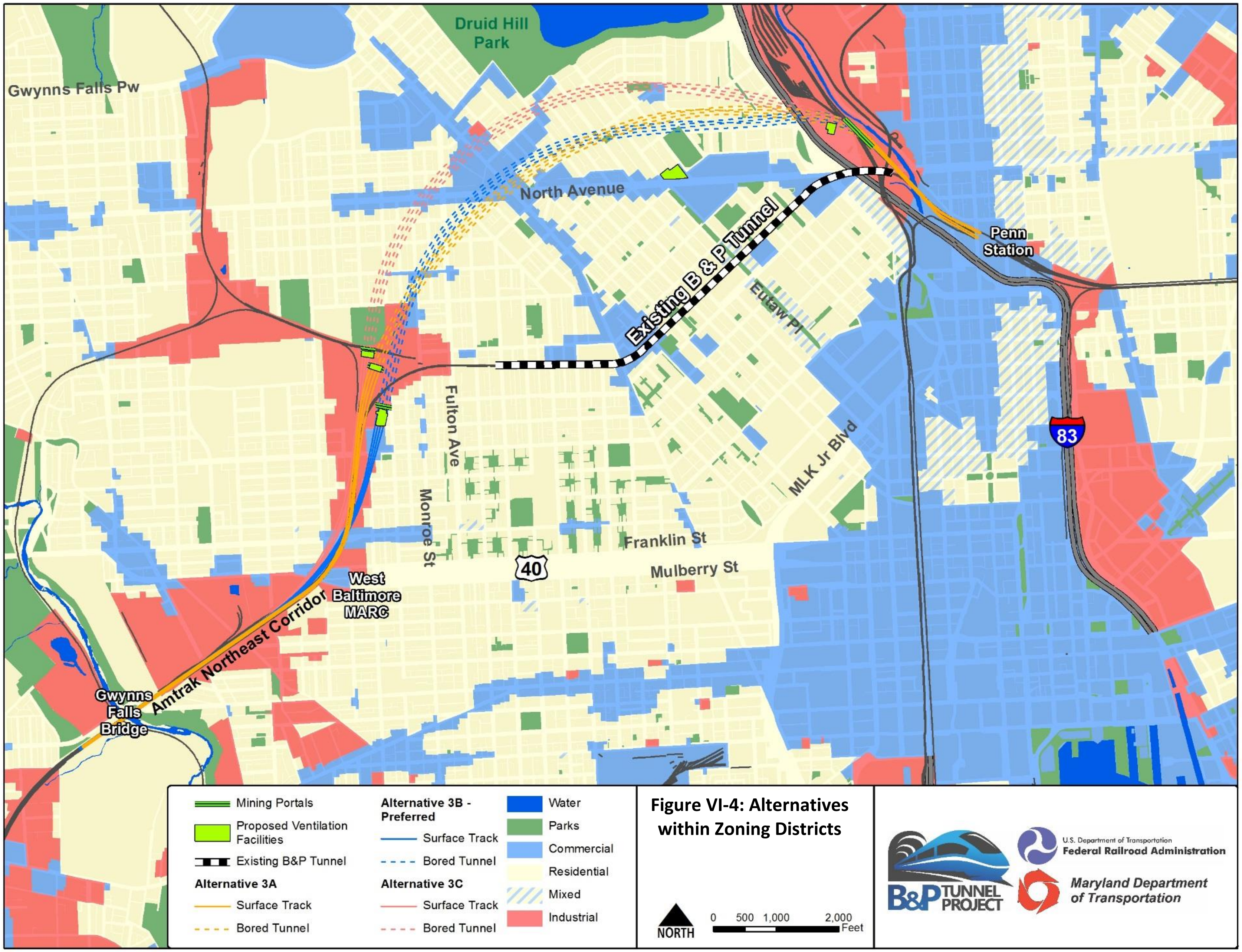


Figure VI-4: Alternatives within Zoning Districts

b. Preferred Alternative

Construction of the north and south portals and Intermediate Ventilation Facility of the Preferred Alternative would convert approximately 2.6 acres of existing industrial land use, approximately 3.4 acres of existing commercial land use, and approximately 0.5 acres of existing residential land use in the Midtown-Edmondson and Reservoir Hill neighborhoods to transportation land use. The Preferred Alternative would require a total of 13.2 acres of right-of-way, not including existing Amtrak or roadway ROW.

Changes in zoning may occur to land surrounding impacted land uses; however, any potential future alterations to existing zoning districts are under the purview of the City of Baltimore and cannot be predicted at this time.

Construction impacts to land use (included in **Table VI-2**) may include temporary conversion of land use to transportation while construction takes place.

c. Alternative 3A

Construction of the north and south portals and Intermediate Ventilation Facility of Alternative 3A would convert approximately 2.4 acres of existing industrial land use and 1.4 acres of commercial land use in the Bridgeview-Greenlawn, Midtown-Edmondson and Reservoir Hill neighborhoods to transportation land use. No residential land use would be required. Alternative 3A would require a total of 9.4 acres of ROW, not including existing Amtrak or roadway ROW.

Changes in zoning may occur to land surrounding impacted land uses; however, any potential future alterations to existing zoning districts are under the purview of the City of Baltimore and cannot be predicted at this time.

Construction impacts to land use (included in **Table VI-2**) may include temporary conversion of land use to transportation while construction takes place.

d. Alternative 3C

Construction of the north and south portals and Intermediate Ventilation Facility of Alternative 3C would convert approximately 0.3 acres of existing residential land use, 6.1 acres of existing industrial land use and 2.1 acres of commercial land use in the Bridgeview-Greenlawn, Midtown-Edmondson and Reservoir Hill neighborhoods to transportation land use. Alternative 3C would require a total of 15.1 acres of ROW, not including existing Amtrak or roadway ROW.

Changes in zoning may occur to land surrounding impacted land uses; however, any potential future alterations to existing zoning districts are under the purview of the City of Baltimore and cannot be predicted at this time.

Construction impacts to land use (included in **Table VI-2**) may include temporary conversion of land use to transportation while construction takes place.

5. Transportation

a. Alternative 1: No-Build

Alternative 1: No-Build would have minimal impacts to the existing road network and transportation services. The existing B&P Tunnel primarily runs below Wilson Street and Winchester Streets, where routine maintenance would take place. This would result in periodic disruptions to the roadway network and existing passenger and freight rail system to conduct repairs. Impacts to existing Amtrak, MARC, and NS freight operations would likely occur, including scheduled maintenance during off-peak hours and potential significant delays from emergency repairs. In the long-term, the frequency and magnitude of repairs required, and resulting impacts to Amtrak, MARC, and freight operations, would increase.

b. Preferred Alternative

The Preferred Alternative would cause long-term impacts to the roadway network in the Bridgeview/Greenlawn and Midtown-Edmondson neighborhoods as a result of south portal construction. These impacts include the realignment of North Pulaski Street to connect to West Lanvale Street and the closure of West Mosher Street at North Payson Street. Additionally, the Preferred Alternative is anticipated to eliminate an estimated 85 on-street parking spaces.

Construction of ventilation facilities is not likely to cause long-term transportation impacts. The North Ventilation Facility and South Ventilation Facility would be located near or above their respective portals, and would not cause any long-term impacts to transportation outside of anticipated road realignments and loss of on-street parking for the north and south portals. The Intermediate Ventilation Facility would be located outside of existing transportation right-of-way.

The Preferred Alternative would require reconstruction of the West Baltimore MARC Station in order to align with the new trackway. The MARC Station would be shifted, but would still remain in the same general location between Franklin and Mulberry Streets and adjacent to existing West Baltimore MARC parking facilities. The Preferred Alternative would orient the reconstructed MARC station along a straighter curve, thus allowing the proposed station to be constructed with ADA compliant high-level platforms. A rebuilt station with high-level platforms would improve accessibility at the station relative to existing conditions and would be consistent with FTA and MTA goals of bringing the station into compliance with ADA requirements. The issues with the West Baltimore MARC Station platforms have been the subject of previous planning studies conducted by MTA.

The Preferred Alternative would benefit passenger rail through Baltimore City by providing more efficient travel and reduction of delays for users of Baltimore Penn Station and the West Baltimore MARC Station. The Preferred Alternative would also improve accessibility at the West Baltimore MARC Station as described above. Relative to Alternative 1, travel times (in minutes:seconds) between the Gwynns Falls Bridge and Baltimore Penn Station under the Preferred Alternative would improve by an estimated 2:31 (for Amtrak Acela), 2:32 (Amtrak Regional) and 1:42 (MARC) relative to existing conditions (average of northbound and southbound). The combined effects of better operational reliability with fewer delays, reduced NEC travel times, and increased accessibility at the West Baltimore MARC Station could encourage automobile users to use transit for commuter and intercity travel, ultimately reducing vehicle miles traveled.

Additional rail capacity will allow for a greater volume of trains to travel through the NEC, providing benefits to Amtrak Acela, Amtrak Regional, and MARC passenger trains. Additionally, the Preferred Alternative could allow for additional freight rail service; however, specific changes to freight operations cannot be determined and are assumed to remain the same as existing conditions based on current track agreements. Further discussion of potential impacts to freight rail is included in **Section VI.M**.

Construction of the Preferred Alternative would temporarily impact east-west travel along West Franklin and West Mulberry Streets, Edmonson Avenue, and West Lafayette Avenue and north-south travel along North Bentalou Street, Wheeler Avenue, North Warwick Avenue, and Franklintown Road. The duration and extent of these impacts is not currently known. A Maintenance of Traffic Plan would be developed during final design, as described in **Chapter VII**, to determine the full extent of roadway impacts and to minimize the impacts where possible.

Short-term impacts to bus, automobile, pedestrian and bicycle travel routes, including temporary street closures and detours, may occur during construction, particularly at the locations for the north and south portals and associated facilities including the North Ventilation Facility, South Ventilation Facility, and the Intermediate Ventilation Facility. The I-83 ramp off-ramp and McMechen Street MTA Entrance, adjacent to the proposed North Ventilation Facility, would experience a series of temporary, short closures during off-peak hours (i.e. overnight and weekends).

Other short-term impacts may include temporary disruption to the operation of the North Avenue Light Rail Station. Once construction has been completed, travel would resume to previous conditions.

Minor disruptions to Amtrak, MARC, and NS freight operations would occur during construction. Most work would be performed without affecting these NEC operations. However, the final cutover and track shifts from the existing tunnel to the new tunnel would cause impacts to NEC operations, such as temporary service disruption. Service at the West Baltimore MARC Station would likely be temporarily impacted during reconstruction of the station platforms.

c. Alternative 3A

Alternative 3A would intersect with West Lafayette Avenue and join the existing NEC tracks in the south portal area in the Rosemont and Midtown-Edmondson neighborhoods. Because West Lafayette Avenue crosses the NEC via an above-ground structure, Alternative 3A would not permanently impact bus, automobile, pedestrian, or bicycle travel across West Lafayette Avenue. Improvements to the West Lafayette Avenue Bridge under this alternative would also be consistent with Baltimore City plans for the bridge, which entails rehabilitating the bridge’s deteriorated pier and spans (Baltimore Metropolitan Planning Organization, 2014). No permanent impacts to on-street parking would be required.

Alternative 3A would not require reconstruction of the West Baltimore MARC Station. The alternative, therefore, would not include a rebuilt station with ADA-accessible high-level platforms. The accessibility issues with the existing West Baltimore MARC Station platforms, which have been the subject of previous planning studies conducted by MTA, would not be addressed by Alternative 3A.

Alternative 3A would benefit passenger rail through Baltimore City by providing more efficient travel and reduction of delays for users of Baltimore Penn Station and the West Baltimore MARC Station. Relative to Alternative 1, travel times (in minutes:seconds) between the Gwynns Falls Bridge and Baltimore Penn Station under Alternative 3A would improve by an estimated 2:00 (for Amtrak Acela), 1:55 (Amtrak Regional) and 1:38 (MARC) relative to existing conditions (average of northbound and southbound). The combined effects of better operational reliability with fewer delays and reduced NEC travel times could encourage automobile users to use transit for commuter and intercity travel, ultimately reducing vehicle miles traveled.

Other impacts from Alternative 3A, including short-term impacts and minor disruptions to rail operations, would be similar to the Preferred Alternative as described above.

d. Alternative 3C

Alternative 3C would cause long-term impacts to the roadway network in the Rosemont neighborhood. The alternative would require permanent street closures of North Bentalou Street from Edmondson Avenue to Lauretta Avenue and Lauretta Avenue east of Wheeler Avenue near the intersection with North Bentalou Street. An estimated 35 on-street parking space would be eliminated.

Alternative 3C would require reconstruction of the West Baltimore MARC Station in order to align with the new trackway. This would result in a rebuilt platform in nearly the same location with ADA-accessible high-level platforms. This would result in similar benefits as the Preferred Alternative, described above.

Alternative 3C would benefit passenger rail through Baltimore City by providing more efficient travel and reduction of delays for users of Baltimore Penn Station and the West Baltimore MARC Station. Relative to Alternative 1, travel times (in minutes:seconds) between the Gwynns Falls Bridge and Baltimore Penn Station under Alternative 3C would improve by an estimated 2:30 (for Amtrak Acela), 2:23 (Amtrak Regional) and 1:44 (MARC) relative to existing conditions (average of northbound and southbound). The combined effects of better operational reliability with fewer delays and reduced NEC travel times could encourage automobile users to use transit for commuter and intercity travel, ultimately reducing vehicle miles traveled.

Other impacts from Alternative 3C, including short-term impacts and minor disruptions to rail operations, would be similar to the Preferred Alternative as described above.

6. Businesses

The B&P Tunnel Project would have varying short-term and long-term impacts to businesses in the Study Area. These impacts include temporary construction impacts and permanent impacts.

Business displacements potentially occurring as a result of the Preferred Alternative are distributed among ZIP codes 21223 and 21217, shown on **Figure VI-5**. The displacements are also shown on the Environmental Resource Mapping in **Appendix A**.

Data on potentially affected businesses along the proposed alignment was collected via field research. The active or inactive statuses of the businesses, including storefront retail and industrial warehouses, regularly change and thus would be further considered during final design and the right-of-way acquisition phase.

a. Alternative 1: No-Build

The No-Build Alternative entails routine maintenance of the existing tunnel with no significant improvements. This would not cause any immediate impacts to businesses in the Study Area.

b. Preferred Alternative

The Preferred Alternative would result in a total of approximately 13 business displacements, including six at the south portal and seven at the Intermediate Ventilation Facility. These displacements would occur in the Bridgeview/Greenlawn, Midtown-Edmondson and Reservoir Hill neighborhoods. The potentially displaced businesses would be from a mix of Accommodation and Food Services, Retail Trade, Transportation, Warehousing, Professional Services and Healthcare Services. Construction of the Preferred Alternative would result in the following business displacements:

- Carpet Warehouse, LLC (2335 West Franklin Street);
- Grocery and Beauty Supply (2235 Edmondson Avenue);
- Pocopico Restaurant (2235 Edmondson Avenue);
- Wonder Enterprises, Inc. (2237 Edmondson Avenue);
- Storage Lot, Name Unknown (740 North Pulaski Street);
- Best Used Appliances (2126 Edmondson Avenue)
- Total Health Care Mt. Royal Health Center (922 West North Avenue)
- Sudsville Laundry (2000 Linden Avenue);
- Linden Bar & Liquor (904 West North Avenue);
- Always Learning Daycare Center (936 West North Avenue);
- Metropolitan Ob Gyn Associates (934 West North Avenue);
- Icetech Inc. (940 West North Avenue);
- LinkIT, LLC (940 West North Avenue);

Impacts to the Study Area would also potentially include loss of employment and loss of income to people working at these businesses.

The Preferred Alternative could cause temporary construction impacts to businesses, such as temporary disruptions or modifications to traffic, loss of parking and difficulty accessing businesses caused by roadway and sidewalk closures and disruptions in regular traffic circulation due to implementation of truck haul routes.

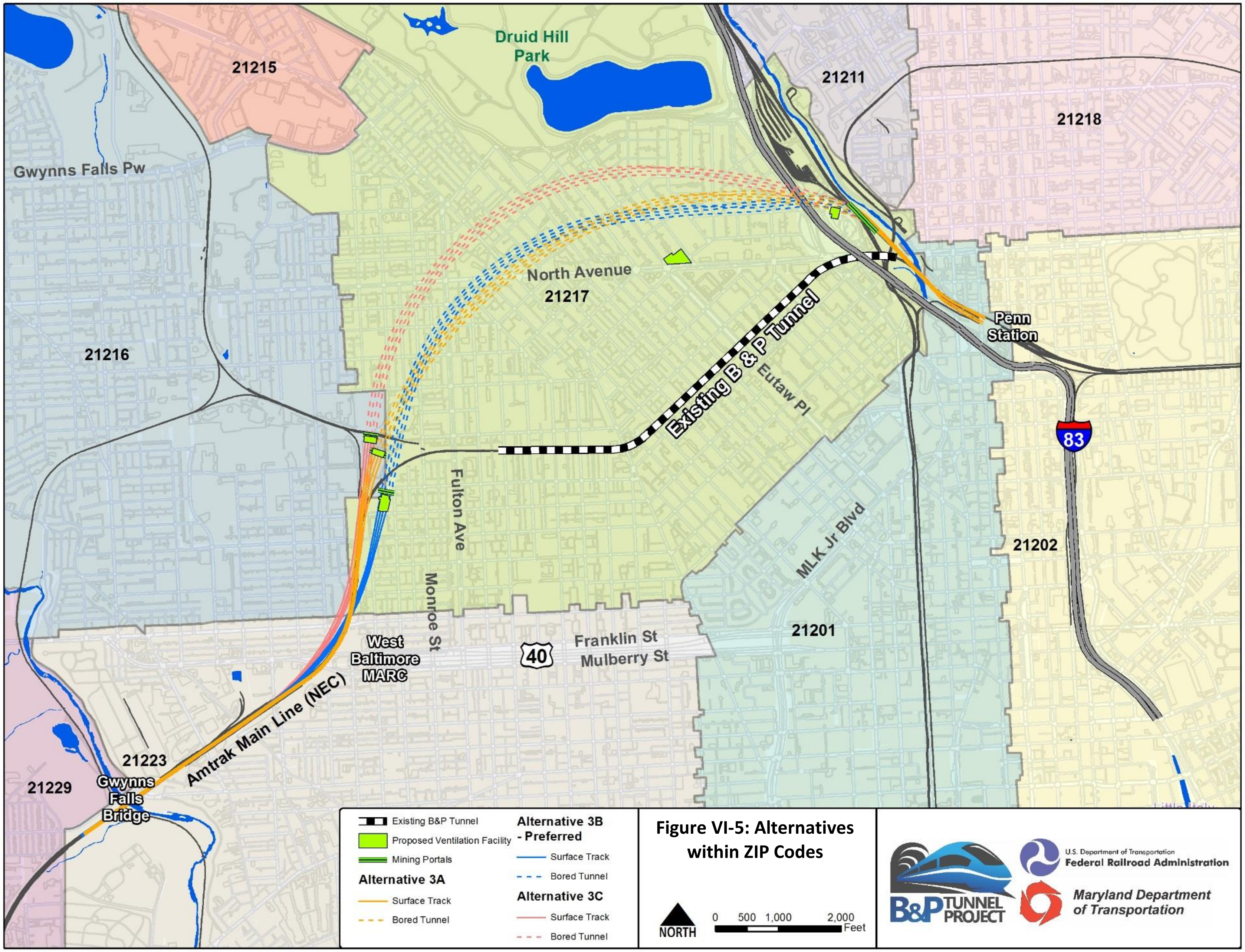


Figure VI-5: Alternatives within ZIP Codes

c. Alternative 3A

Alternative 3A would result in a total of approximately nine business displacements, including two at the south portal and seven at the Intermediate Ventilation Facility. The potential business displacements, located in Bridgeview-Greenlawn and Reservoir Hill, include:

- P. Flanigan Asphalt Company (1318 North Monroe Street)
- Warehouse, name unknown (2101 Riggs Avenue)
- Total Health Care Mt. Royal Health Center (922 West North Avenue)
- Sudsville Laundry (2000 Linden Avenue);
- Linden Bar & Liquor (904 West North Avenue);
- Always Learning Daycare Center (936 West North Avenue);
- Metropolitan Ob Gyn Associates (934 West North Avenue);
- Icetech Inc. (940 West North Avenue);
- LinkIT, LLC (940 West North Avenue);

Impacts to the Study Area would also potentially include loss of employment and loss of income to people working at these businesses. Temporary impacts would occur under Alternative 3A similar to those described under the Preferred Alternative above.

d. Alternative 3C

Alternative 3C would result in a total of approximately 16 business displacements, including nine at the south portal and seven at the Intermediate Ventilation Facility. The businesses potentially impacted under Alternative 3C are located in the Midtown-Edmondson, Penrose/Fayette and Reservoir Hill neighborhoods. They include:

- J.J. Adams Fuel Oil Company (2113 W. Lafayette Ave);
- Spincycle Coin Laundry (2200 Edmondson Ave);
- Grocery and Beauty Supply ((2235 Edmondson Avenue);
- Pocopico Restaurant (2235 Edmondson Avenue);
- Wonder Enterprises, Inc. (2237 Edmondson Avenue);
- Carpet Warehouse, LLC (2335 West Franklin Street)
- Warehouse, name unknown (2335 West Franklin Street);
- Warehouse, name unknown (2415 West Franklin Street);
- Price Busters Furniture (2415 West Franklin Street);
- Total Health Care Mt. Royal Health Center (922 West North Avenue)
- Sudsville Laundry (2000 Linden Avenue);
- Linden Bar & Liquor (904 West North Avenue);
- Always Learning Daycare Center (936 West North Avenue);
- Metropolitan Ob Gyn Associates (934 West North Avenue);
- Icetech Inc. (940 West North Avenue);
- LinkIT, LLC (940 West North Avenue);

Impacts would also potentially include loss of employment and loss of income to people working at these businesses. Temporary impacts would occur under Alternative 3C similar to those described under the Preferred Alternative above.

7. Economy

Alternative 1: No-Build would have very little direct short-term economic impact to the Study Area. In the long-term, Alternative 1: No-Build could result in economic losses to the Baltimore metropolitan region, as the B&P Tunnel would continue to exist as a bottleneck for passenger and freight rail service along the NEC, and would not support projected travel demand for high-speed regional and commuter passenger services.

The most immediate economic effect of the Preferred Alternative, Alternative 3A, or Alternative 3C would be the benefit from construction activity in the region, associated with new employment opportunities. Economic benefits from the build alternatives will be generated through the use of the rail service and market response to the additional rail activity accommodated by the proposed tunnel's greater capacity.

The build alternatives could also have implications for economic development in the West Baltimore area. These implications (both positive and negative) have been assessed in detail for Alternatives 3A, 3B and 3C in in the DEIS, and have been updated based on the Preferred Alternative (Alternative 3B). The relatively minor refinements to Alternatives 3A and 3C since the DEIS (described in **Chapter III**) did not result in changes to the DEIS assessment. The assessment is summarized below.

a. Economic Development Assessment of B&P Tunnel Alignment Options, West Baltimore

The Preferred Alternative or Alternative 3C would require reconstruction of the West Baltimore MARC station, which could potentially affect Transit Oriented Development (TOD) within the area. Alternative 3A would not directly impact the West Baltimore MARC Station. To further explore the potential TOD impacts associated with the Preferred Alternative and Alternative 3C, FRA and MDOT conducted an economic assessment to analyze the economic development opportunities each alternative may create.

The Preferred Alternative would shift the West Baltimore MARC Station slightly east and reconstruct the station along the new track alignment which will accommodate high level platforms meeting the ADA accessibility requirements. Alternative 3C would shift the MARC Station slightly west and would also allow ADA accessible platforms. Alternative 3A would not impact the MARC Station.

This analysis evaluated demographic data for a half-mile radius around the West Baltimore MARC Station. A half-mile radius was used because this distance is traditionally considered to be the walk shed from transit stops. Demographic data of the City of Baltimore and the Baltimore-Columbia-Towson Metropolitan Statistical Area (MSA) were also collected to provide a point of comparison and general idea of overall regional market conditions. Demographic conditions of the area are described below.

Between 2000 and 2010, populations within a half-mile radius of the West Baltimore MARC Station have declined by an average 1.9 percent. Between 2010 and 2015 the area experienced a 2.6 percent decrease. Across this same time period, average household sizes have also decreased from 2.91 to 2.83. The median age of the half-mile radius population is 41 years old. Generally, the educational attainment of the area is low; 28.7 percent of the population has less than a high school education, while 58.1 percent have a high school diploma. The racial composition of the area is mostly Black or African American (95.9 percent) and 1.6 percent identify as white. Currently, the median household income within the half-mile radius is $26,994, with a third of these households earning below $15,000, suggesting a high poverty rate within the area.

The majority of households within a half-mile radius of the West Baltimore MARC Station are renter-occupied (52.5 percent), with a median rent of $690 per month; 49.2 percent of the owner-occupied houses are worth between $60,000 and $124,999; the median home value is $74,878. Homes are generally older, with 90.7 percent being built in 1950 or earlier.

The average annual expenditure per household on retail goods was $11,829.88 (compared to $18,850.10 in Baltimore City and $31,097.52 in the MSA). 54.8 percent of people within the area are employed in the services industry. This is the largest employment industry in the area, the second largest being retail and trade, where 14.6 percent are employed.

The inventory of 38 retail buildings and rentable building area of 120,371 square feet has remained the same from 2010 to 2015. The vacancy rate has also remained the same at 1.5 percent annual average. There is minimal supply of office space within this area, which also has remained the same in the last five years. Rentable building area remained the same at 9,755 square feet and vacancy rate has remained zero percent in the last five years. The industrial market is the most prominent commercial use in the station area and has also experienced decreasing vacancy rates. Vacancy rate dropped significantly from 9.68 percent in 2010 to 6.63 percent in 2011; and from 4.9 percent in 2012 to 0.6 percent in 2013.

Over the past ten years, ridership for the West Baltimore MARC Station has been increasing. From 2005 to 2015, ridership at this station increased by 17.38 percent and had a 1.62 percent compound annual growth rate (CAGR). Despite a decrease in more recent years, the overall ridership trend is slowly growing at the West Baltimore MARC Station. The travel patterns of area residents show a majority of boardings in Washington DC, which had an average of 10,549 out of the 13,474 boardings in the 12 other stations on the MARC Penn Line, suggesting that the majority of passengers have Washington as their destination.

Looking at work locations of residents within the half-mile radius of the station, the majority work within the City of Baltimore or other locations not serviced by the MARC Penn Line. This suggests that the majority of commuters at the West Baltimore MARC station are not residents within the half-mile.

A previous study, the *West Baltimore MARC Transit-Centered Community Development Strategy* was conducted for West Baltimore in September, 2008 by the Maryland Department of Transportation, the West Baltimore Coalition and the City of Baltimore. This strategy recommended the following Economic Development Principles:

- Cultivate Large-Scale Economic Development Opportunities
- Attract/Develop Businesses/Facilities to Serve the Local Population
- Promote Small Business Development and Entrepreneurship
- Enhance Local Workforce, Employment Opportunities, and Local Business Participation

The build alternatives were evaluated in the context of these principles, as well as in light of the current demographic, economic and political changes that impact the neighborhoods. Details of the evaluation of these principles in relation to the alternatives are discussed below. The Project could potentially provide some development opportunities for the communities.

i. *Cultivate Large-Scale Economic Development Opportunities*

This principle focuses on redevelopment potential and inclusion of mixed-use developments to boost population of the area and spending power. It also suggests a marketing strategy for the area and removing barriers to investment for developers and businesses. The strategy specifically names several potential redevelopment sites including the MARC station parking lots, the Ice House and the Southwest Industrial Area (Warwick Triangle), which are all adjacent to the MARC station.

The build alternatives neither help nor harm this principle. Because the tracks will mostly follow the existing right-of-way, they are not anticipated to impact large portions of the developable land. The same challenges apply to land assembly and developing private and public partnerships.

ii. *Attract/Develop Businesses/Facilities to Serve the Local Population*

This principle emphasizes the inclusion of businesses and services that the neighborhoods identified as needs, including supermarkets, food stores, restaurants and cafes, a pharmacy, entertainment, dry cleaners, a hardware store, a bookstore, a pet store, medical offices, and public facilities such as a library, police substation, workforce development center, a community center, recreational/fitness facilities, playgrounds, charter schools and a business incubator.

The build alternatives neither help nor harm this principle. Potential positive impacts could occur if the Project temporarily increases employment opportunities for area residents, which could increase spending power and make it a more attractive business location.

iii. *Promote Small Business Development and Entrepreneurship*

This principle emphasized the importance of developing small business in addition to large-scale economic development for the area.

The build alternatives will not impact this principle. If, however, local, small businesses are required to be used for construction of the new tunnel, this could potentially enhance development of these services; as could a temporary construction period increase in spending on food, beverage and materials.

iv. *Enhance Local Workforce, Employment Opportunities, and Local Business Participation*

This principle emphasizes better jobs and wages for area residents, participation of local businesses and the importance of education for workforce development.

This principle can be most directly impacted by the proposed tunnel construction. Employing local tradespeople and companies and hiring at the level of the area neighborhoods for construction of the tunnel would directly impact area residents and would also enhance the potential for the other principles to have greater success. Implementing trade development programs in conjunction with construction would enable the economic impact of the construction-period employment to continue after tunnel construction is complete.

b. Transit-Oriented Development Potential

Transit-Oriented Development (TOD) is defined as “type of development that includes a mixture of housing, office, retail and/or other amenities integrated into a walkable neighborhood and located within a half-mile of quality transportation” (Reconnecting America, n.d.). The factors that make TOD successful from an economic development and real estate development standpoint include Market Demand; Fixed Guideway Transit; Available Land Sites; Community and Political Support and Joint Development/Partnership Potential. West Baltimore and the alternatives were evaluated, as applicable, qualitatively for the potential strengths and challenges of TOD.

i. *Market Demand*

West Baltimore is generally economically depressed, which creates difficulty in attracting new market-rate investment. It is also not located immediately proximate to an employment center which can add to this difficulty. In order to attract TOD, other measures would need to be taken in order for it to be successful, and it is less likely to be a value-capture on land than in other areas where demand is high and land is at a premium. Currently, MARC ridership is not sufficient to encourage development. Average daily ridership in 2015 was 773 passengers, in contrast to Odenton, a successful TOD, which had 2,730 and Baltimore Penn Station, which had 3,639 passengers. From a retail perspective, and considering a sale per square foot ratio of $250 per square foot, if every passenger spent $10 per day, totaling approximately $2 million in weekday sales, only 8,000 square feet of retail space (the approximate size of one medium to large-sized restaurant or large convenience store or pharmacy) would be supported.

Based solely on the examined demographic and real estate data presented, there is unlikely to be sufficient demand for higher-end residential or office space without intervention.

ii. *Fixed-Guideway Transit*

The type of transit available can impact the nature of TOD development. In West Baltimore, the primary TOD opportunity is at the West Baltimore MARC station. MARC, though fixed-guideway transit, which tends to have a higher impact on property values and the ability to capture value from investment, is a commuter train, not used for intra-city transit and has overall low relative ridership. There is some potential however to boost ridership through spurring development if a market analysis suggests such. With the cancellation of the Red Line (another fixed-guideway system), which would have connected at the West Baltimore MARC, it is less likely to attract significant investment.

iii. *Available Land Sites*

The *West Baltimore MARC Transit-Centered Community Development Strategy* identified available land and redevelopment opportunities around the station (the American Ice Company building, the MARC station parking lots and adjacent industrial property). It is not known the extent or quantity of parcels that are likely to be impacted in a way that could suggest redevelopment by the build alternatives.

iv. *Community and Political Support*

Completion of the *West Baltimore Marc Transit-Centered Community Development Strategy* indicates there is community and stakeholder support for development of West Baltimore. However, no other plans, programs or initiatives were found since this strategy development.

The build alternatives do not necessarily impact the community or political support for TOD. However, if the Project provides opportunities and a positive experience in large-scale development in the area, it can set the stage for future positive relationships between the community and other external players such as developers, MARC, or other entities involved in the development of TOD.

v. *Joint Development/Partnership Potential*

There is the potential for Joint Development in the area, once the appropriate private partners and the right opportunity are found, which are impacted by the other factors previously mentioned. Through land acquisition or other assistance, it is possible that the Project could assist in this effort.

Overall, the build alternatives will not have a significant impact on the potential for TOD or area community economic development through real estate development. The primary impacts that the project can have on the community's economic health will come from:

- Project-related employment opportunities
- Construction-period spending, which has ripple effects throughout the economy
- If applicable, enhanced freight/passenger rail service (time savings and efficiency) though this is not as related to the immediate surrounding neighborhoods except to the extent these services are used by area residents/businesses.

Other large area projects, such as the University of Maryland BioPark, have successfully integrated in to the neighborhood through establishing relationships with area non-profits and community development corporations, working with educational programs and job-development. These are not the result of one particular alignment opportunity, nor are they a forgone conclusion to result from the tunnel construction, but are available as potential tools for the project to positively impact the economy of the local community beyond the associated substantial infrastructure cost and the related expenditures on goods, labor and services.

c. Construction Impacts

A project of this magnitude will require specialized labor and equipment, and draw supplies and services from a large market. Therefore, net effects generated by construction activity from the build alternatives has been considered for two geographies: (1) the combined counties included in the Washington-Baltimore-Arlington Combined Statistical Area (CSA), Philadelphia-Reading-Camden CSA, Harrisburg-York-Lebanon CSA, Lancaster County, PA, Kent County, MD and Caroline County, MD, and (2) the State of Maryland. The economic effects are estimated in terms of net earnings and employment.

The economic impacts associated with construction expenditures are measured using regional multipliers from the Bureau of Economic Analysis (BEA) within the US Department of Commerce. Derived from the Regional Input-Output Modeling System, the so-called RIMS II multipliers measure the total change (direct, indirect, and induced effects) in output, employment, and earnings that results from an incremental change to a particular industry. Two sets of multipliers are used. The first set was constructed by BEA to reflect the combined counties noted above. The second set of multipliers corresponds to the State of Maryland's economy. The multipliers are based on the 2007 Benchmark Input-Output Table for the nation and 2013 regional accounts data; they represent the most updated version available at the time this analysis was prepared.

i. *Earnings and Employment Effects from Capital Expenditures*

Construction of a build alternative would represent a significant capital investment in the regional economy. This spending will increase the employment and earnings for the duration of the construction process. This section describes the spending and the anticipated economic impacts.

ii. *Capital Expenditures*

Table VI-3 summarizes the preliminary cost estimates for the Preferred Alternative, as well as Alternatives 3A and 3C. The cost estimate varies by alternative using six major cost categories: Construction, Force Account and Flagging, Right-of-way, Engineering, Design Development/Risk, and Escalation.

Table VI-3: Preliminary Design Cost Estimates

Category	Alternative 3A	Alternative 3B - Preferred Alternative	Alternative 3C
01- Construction Cost	$1,606.01	$1,735.45	$1,760.13
02 - Force Account and Flagging	$24.00	$24.00	$24.00
03 - Right-of-Way	$64.24	$69.41	$70.40
05 - Engineering Cost	$549.99	$584.94	$591.56
06 - Design Development / Risk	$707.24	$763.44	$773.72
08 - Escalation	$908.11	$980.93	$988.09
Total	**$3,859.59**	**$4,158.18**	**$4,207.90**

Costs in Millions of Dollars (2015). Based on preliminary estimates included in DEIS; does not include mitigation or Intermediate Ventilation Facility.

The economic impact of these expenditures will vary significantly by type and depends on the amount of locally produced goods and services embodied in the purchase.

Construction goods and services will be purchased in the local economy. Although every building material required for the project is not produced locally, the RIMS II multipliers reflect the supplier linkages for the industry, and thus account for this leakage from the local economy. These include costs within categories 01 and 08.

Boring Tunnel Machine purchases, by contrast, will not be purchased from the local economy as this very specialized type of machinery is not widely produced[1]. Therefore, it is assumed that no local labor is used to produce the machinery and no impact is generated by this purchase. These items, which fall within category 01, are included in costs shown in **Table VI-3**; however, they are excluded from the construction costs when estimating the economic impact of the project.

It is also assumed that **motor vehicle purchases** will not be purchased from the local economy. The Study Area does not appear to produce motor vehicles, limiting the potential impact this purchase can have. Thus, as no local labor is used to produce the vehicles, no local impact is generated by their purchase. Although there is likely to be some assembly required upon delivery of the vehicles and it is possible that a component of the vehicle might be made by a supplier in the Study Area, these possibilities represent a negligible share of the vehicles' cost and are excluded from this analysis. Vehicle costs fall within category 01 and are captured in **Table VI-3**; however, they are excluded from the construction costs when estimating the economic impact of the project.

The **Right-of-Way (ROW) expenditures** are for real property only. As there is no labor associated with the ROW expenditures, there is no economic impact to the pure land costs. Because of this, costs for ROW are excluded from the economic impact estimation.

The **Engineering and Design Development costs**, by contrast, are purchased in the local economy and thus have an impact in the local economy. These include costs within categories 02, 05, 06, and 08 identified in **Table VI-3**.

In sum, there are two types of capital expenditures that are expected to impact the economy: General Construction and Soft Costs. Construction goods and services are considered General Construction, and Engineering and Design Development costs are considered Soft Costs.

iii. *Funding Sources*

In order to isolate the potential economic effects of the project to the regional economy and to the State of Maryland, it is necessary to distinguish those resources that are either a) new to the economy and that would not be invested in the Study Area but for the Preferred Alternative; or b) those that would still be spent in the region with similar economic effects (for example, funds that would be allocated to other transportation construction projects in the region). The analysis assumes that the funding for the project represents 100% net new resources that are being invested in the region because of the project.

Applying the Multipliers for the Construction (General Construction) and Professional, Scientific, and Technical services (Soft Cost) industries to the amount of new funding that will be used for capital expenditures provides estimates of the net earnings and employment impacts generated by each alternative by region.

Construction and soft costs that will generate economic impacts are shown in **Table VI-4** and **Table VI-5**. Construction costs include total construction plus total escalation costs less the costs associated with the Tunnel Boring Machines (purchase, substation and switch gear, spare parts, and truck tractor and flatbed vehicle costs used to break down the Tunnel Boring Machine), management staff, vehicle purchase costs, and design development, engineering, and ROW escalation costs. Professional, Scientific, and Technical Service costs include Force Account and Flagging, Engineering, Design Development/Risk, and total escalation costs less construction and ROW escalation costs. **Table VI-6** shows the multipliers that are applied to the construction and soft costs shown in **Table VI-4** and **Table VI-5**, respectively, which are expected to impact the economy.

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[1] The analysis assumes that the associated substation and switch gear plus the spare parts will not be manufactured locally.

The interpretation of the RIMS II employment multipliers used in the analysis is as follows. The construction industry is used as an example.

The **Final Demand Earnings Multiplier** represents the total dollar change in earnings of households employed by all industries for each additional dollar of output delivered to final demand by the Construction industry. Based on the multipliers in **Table VI-6**, every $1 (in 2015 dollars) in construction goods and services delivered to final demand in the aggregated counties and in the State of Maryland yields $0.61 ($2015) and $0.59 ($2015) of earnings in all industries for the aggregated counties and for the State of Maryland, respectively.

Table VI-4: Construction Costs

	Alternative 3A	Alternative 3B – Preferred Alternative	Alternative 3C
01 Construction Cost	$1,606.01	$1,735.45	$1,760.13
Tunnel Boring Machines and Vehicle Purchase Costs excluded from the analysis	($67.12)	($67.12)	($67.12)
08 Escalation	$908.11	$980.93	$988.09
Escalation Design Development & Risk and Engineering Costs that are applied to Professional Services Costs and excluded from the construction costs	($370.07)	($396.90)	($401.87)
Escalation ROW excluded from the analysis	($12.06)	($13.03)	($13.21)
Construction Costs Used in the Analysis	**$2,064.87**	**$2,239.34**	**$2,266.01**

Costs in Millions of Dollars (2015). Based on DEIS cost estimates; does not include Intermediate Ventilation Facility or mitigation.

Table VI-5: Professional, Scientific, and Technical Services Costs

	Alternative 3A	Alternative 3B – Preferred Alternative	Alternative 3C
02 Force account and flagging	$24.00	$24.00	$24.00
05 Engineering Cost	$549.99	$584.94	$591.56
06 Design Development / Risk	$707.24	$763.44	$773.72
Design Development/Risk ROW costs excluded from the analysis	($9.64)	($10.41)	($10.56)
08 Escalation	$908.11	$980.93	$988.09
Escalation Costs applied to Construction Costs and are excluded from professional services costs	($525.98)	($571.01)	($573.00)
Escalation ROW excluded from the analysis	($12.06)	($13.03)	($13.21)
Professional, Scientific, and Technical Services Costs Used in the Analysis	**$1,641.66**	**$1,758.87**	**$1,780.60**

Costs in Millions of Dollars (2015). Based on DEIS cost estimates; does not include Intermediate Ventilation Facility or mitigation.

Table VI-6: RIMS II Multipliers by Region

Region	Industry	Final Demand	
		Earnings (dollars)	Employment (jobs)[2]
Aggregated Counties	Construction	0.6076	12.9737
	Professional, Scientific, and Technical Services	0.6654	12.659
State of Maryland	Construction	0.5931	12.249
	Professional, Scientific, and Technical Services	0.7457	14.0355

Source: Bureau of Economic Analysis, US Department of Commerce.

The **Final Demand Employment Multiplier** represents the total change in number of jobs that occur in all industries for each $1 million (in 2013 dollars) of output delivered to final demand by the Construction industry. Based on the multipliers in **Table VI-6**, every $1 million in construction goods and services delivered to final demand in the aggregated counties and in the State of Maryland (in 2013 dollars) yields 12.97 job years and 12.25 job years in all industries for the aggregated counties and for the State of Maryland, respectively. (A job year is equivalent to one job served for one year.)

iv. *Construction Impacts*

There are no long-term economic impacts generated by capital expenditures. Construction-related impacts last for the duration of the project's construction cycle from the third quarter of 2019 through the fourth quarter of 2026.

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[2] As the Final Demand Employment Multiplier is based on 2013 data, the capital expenditure is deflated to 2013 dollars for this calculation. Non-defense direct capital deflator is used for construction impacts and the GDP (chained) price index is used for professional services impacts. Source: Office of Management and Budget, Table 10.1-Gross Domestic Product and Deflators used in the Historical Tables: 1940-2020, https://www.whitehouse.gov/omb/budget/Historicals.

v. *Earnings Impacts*

The results of construction spending on earnings in the aggregated counties from the Preferred Alternative would result in a total of $2,531 million ($2015), over an approximate 84-month construction period. The results of construction spending on earnings in the State of Maryland from the Preferred Alternative would result in a total of $2,640 million ($2015) over an approximate 84-month construction period. **Table VI-7** shows the net effects of total earnings from construction activity across the aggregated counties and for the State of Maryland, including Alternative 3A and 3C.

Table VI-7: Net Effects of Construction Activity on Total Earnings

Region	Industry	Total Earnings ($2015M)		
		Alternative 3A	Alternative 3B – Preferred Alternative	Alternative 3C
Aggregated Counties	Construction	$1,254.62	$1,360.62	$1,376.83
	Professional Services	$1,092.36	$1,170.35	$1,184.81
	Total	**$2,346.98**	**$2,530.98**	**$2,561.64**
State of Maryland	Construction	$1,224.68	$1,328.15	$1,343.97
	Professional Services	$1,224.19	$1,311.59	$1,327.79
	Total	**$2,448.86**	**$2,639.74**	**$2,671.76**

Costs in Millions of Dollars (2015).

vi. *Employment Impacts*

Employment impacts assessed would include one-time impacts that last for the duration of the Project's construction. The employment effects are expressed in job years, which are defined as one full-time job for one person for one year. For example, three job years are equal to three people doing a job for one year, or one person doing a job for three years.

The results of construction spending on employment in the aggregated counties from the Preferred Alternative would result in a total of 49,875 job years over the approximate 84-month construction period. The results of construction spending on employment in the State of Maryland from the Preferred Alternative would result in a total of 50,650 job years over the approximate 84-month construction period. **Table VI-8** shows the net effects of total employment from construction activity across the aggregated counties and for the State of Maryland, including Alternatives 3A and 3C.

Table VI-8: Net Effects of Construction Activity on Total Employment

Region	Industry	Total Employment (job years)		
		Alternative 3A	Alternative 3B – Preferred Alternative	Alternative 3C
Aggregated Counties	Construction	26,035	28,235	28,571
	Professional Services	20,197	21,639	21,907
	Total	**46,233**	**49,875**	**50,478**
State of Maryland	Construction	24,581	26,658	26,975
	Professional Services	22,394	23,992	24,289
	Total	**46,975**	**50,650**	**51,264**

d. Economic Effects beyond Construction

The tunnel is used by Amtrak and MARC's commuter rail services. Because of the central role of the NEC (of which the tunnel is a key asset) in the region's transportation network, the range of potential categories of economic effects extends to congestion relief to the other modes that operate in the Northeast region and which connect to the NEC. The benefits of the build alternatives thus extend beyond intercity rail passengers to existing and future rail commuters and highway drivers. Beyond the immediate construction impacts described above, there are four broad classes of benefits: 1) Costs avoided; 2) User and environmental benefits; 3) Capacity on other modes or services; and 4) Market response. The discussion below identifies and describes qualitatively these potential economic effects.

i. *Costs Avoided*

The new tunnel will have a modern design that accommodates current train specifications and operating standards, as well as greater capacity. This feature could benefit rail travelers and shippers whose goods utilize the tunnel, as well as Amtrak, MARC and NS. These benefits are realized through the following potential economic effects:

- Ability to avoid disruptions to existing rail service during construction if new tunnels are built before the existing one is rehabilitated or taken out of service.
- The avoidance of tunnel maintenance costs (may be offset by the expansion of tunnel capacity).
- Operating cost savings for rail service providers who now avoid delays.
- Greater redundancy in the event of a disruption to rail service (freight and passenger rail).

ii. *User and Environmental Benefits*

The modern designed and expanded tunnel will remove a chokepoint along the NEC that will allow service providers to offer improved service. These user benefits have economic value. User benefits can be realized as commuters, business travelers and tourists travel the corridor more efficiently and with greater safety. The capacity benefits operations in two ways: ability to accommodate higher volumes, and greater flexibility to accommodate trains of different sizes and speeds. Because of operating rules and differences in speed, one Acela train takes up the same rail network capacity as two to three extended peak commuter slots. To the degree that greater numbers of rail travelers can be accommodated, auto travelers have the ability to divert from autos to rail. As operations become more efficient, environmental benefits are generated through the avoidance of emissions and through energy savings. These are recurring benefits that support the region's economy over time:

- Improved rail service reliability
- Faster rail travel speeds
- Ability to accommodate greater intercity passenger rail travel
- Ability to accommodate greater commuter rail service, and
    - Safety
    - Travel cost savings
    - Reduced auto emissions and energy savings
- The two NS freight trains would experience greater reliability.

iii. *Capacity on Other Modes/Rail Services*

Highway travelers who divert to rail will free up capacity on the road system. This additional capacity has value for the auto travelers who remain on the highway. The degree of capacity gain will depend on the mix of services that use the tunnel. Intercity travel is a comparatively small share of the overall regional highway travel market.

The degree to which rail traffic shifts from other congested parts of the rail network to utilize the tunnel will eliminate conflicts between passenger and freight services, as well as between different types of passenger rail services that travel at different speeds.

These are recurring benefits that apply to both the surrounding Baltimore region as well as a multistate region because of the impacts on intercity travel and the national freight rail network:

- As new auto or rail travelers who are accommodated through the greater tunnel capacity and associated expansion of service divert to rail, this frees up capacity on the region's roads, potentially benefiting non-rail travelers by alleviating traffic congestion.
- The degree to which passenger service can be rerouted through the expanded tunnel frees up capacity elsewhere in the rail network, potentially benefiting freight operations in the region.

iv. *Market Response*

The magnitude and type of economic development response that could occur due to alleviating the current tunnel chokepoint on the corridor depends on how the additional capacity is utilized. Greater intercity connectivity and service has one type of impact; greater commuter service has another. To date, no service plan for how the tunnel will be used is available. However, recent work for the NEC FUTURE Tier 1 EIS asked stakeholders in Baltimore and elsewhere along the NEC about whether and how improved rail service could benefit their economy[3]. The following summarizes some of the key points from that work relevant to the tunnel.

- Stakeholders all along the NEC uniformly valued reliability of service as the most important or among the leading qualities of service. Stakeholders in the southern (including Baltimore) and central parts of the corridor indicated that travel time was secondary, and that frequency of service and connectivity to target markets were the most important qualities needed for enhanced rail service to spur development in their communities. The improved tunnel supports all of these performance objectives.
- Stakeholders maintained that increasing connections to the north invites businesses to Baltimore. People can get to locations north, which provides an opportunity for existing industries to grow because they are more accessible.
- Economic development stakeholders reported difficulty attracting young workers to Baltimore—a challenge to technology growth in the city. Greater accessibility and connectivity to other nearby cities on the corridor could expand this labor market.

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[3] NEC FUTURE TIER 1 EIS, Economic Development Workshops – Summary, July 2015. Accessed November 29, 2015 at http://www.necfuture.com/pdfs/2015_0720_economic_development_workshop_summary.pdf

8. Neighborhoods and Community Facilities

Neighborhood and community facility impacts were assessed in terms of potential impact to neighborhood character, community cohesion and isolation. This evaluation determined if the build alternatives would bisect neighborhoods, impact community relationships or attachments to neighbors, groups, and institutions built as a result of continued association over time, isolate one or more portions of a neighborhood from others, or create a barrier that would isolate one neighborhood from another.

a. Alternative 1: No-Build

As the existing conditions under this alternative would not change, no impacts to neighborhoods and community facilities would occur.

b. Preferred Alternative

Neighborhood and community facility impacts from the Preferred Alternative are shown on **Figure VI-6** and **Figure VI-7**. The alignment for the Preferred Alternative would be bored underground; therefore, neighborhood and community facility impacts would primarily occur at the north and south portal and ventilation facility locations.

The north portal and North Ventilation Facility would be constructed in the east Jones Falls Area neighborhood on existing transportation right-of-way, which includes Baltimore City Department of Transportation's North Avenue Facility Maintenance yard and MTA's North Avenue Light Rail Station. Construction of the north portal and North Ventilation Facility in this area would blend with the industrial transportation character of the existing land use. Therefore, construction of the north portal and North Ventilation Facility would not result in any impact to neighborhood character or cohesion, and would not cause neighborhood isolation.

The Intermediate Ventilation Facility is proposed a site at 900-940 West North Avenue, located in the Reservoir Hill neighborhood along the commercial North Avenue corridor. The Intermediate Ventilation Facility would have visual impact to community character, as well as direct impacts to existing land uses. For comparison of the environmental impacts of other Intermediate Ventilation Facility sites considered, see **Section VI.P**.

The parcels at 900-940 West North Avenue contain seven businesses whose services include healthcare, professional services and daycare. Construction of the Intermediate Ventilation Facility on this site would have some impact to the community. The Intermediate Ventilation Facility would displace existing businesses that currently service the community in a commercial district. Replacing these businesses with a ventilation facility could lead to less community cohesion within the Study Area. These services would no longer be proximal to each other and community ties could potentially be affected or lost. The businesses could potentially be relocated near their existing location, which would reduce potential impacts to community cohesion.

The south portal and South Ventilation Facility of the Preferred Alternative would be located slightly to the east of the existing NEC railway in the Bridgeview/Greenlawn and Midtown-Edmondson neighborhoods. Construction of the south portal would have impacts to community facilities, residential properties, and businesses, which would result in impacts to neighborhood character and community cohesion.

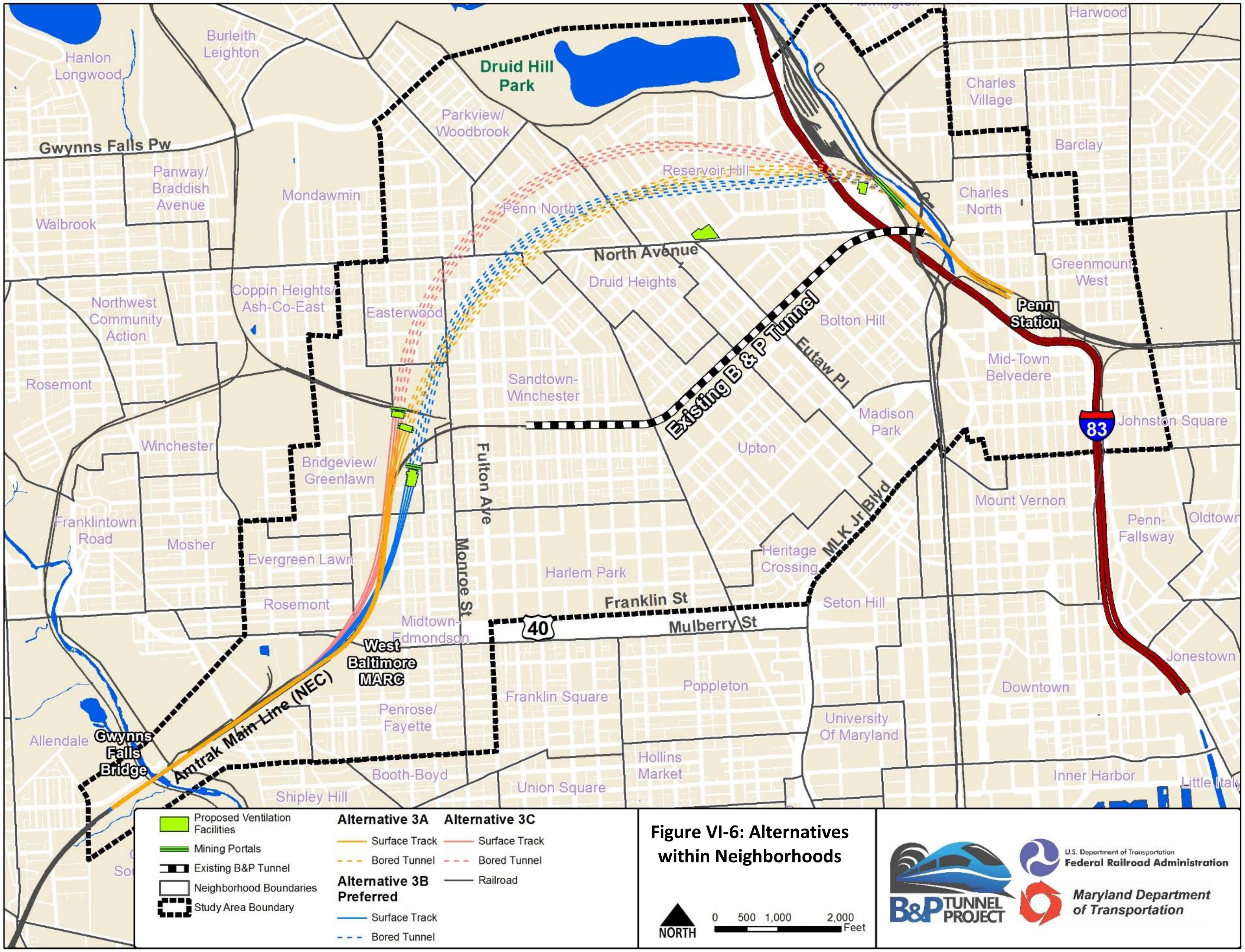


Figure VI-6: Alternatives within Neighborhoods

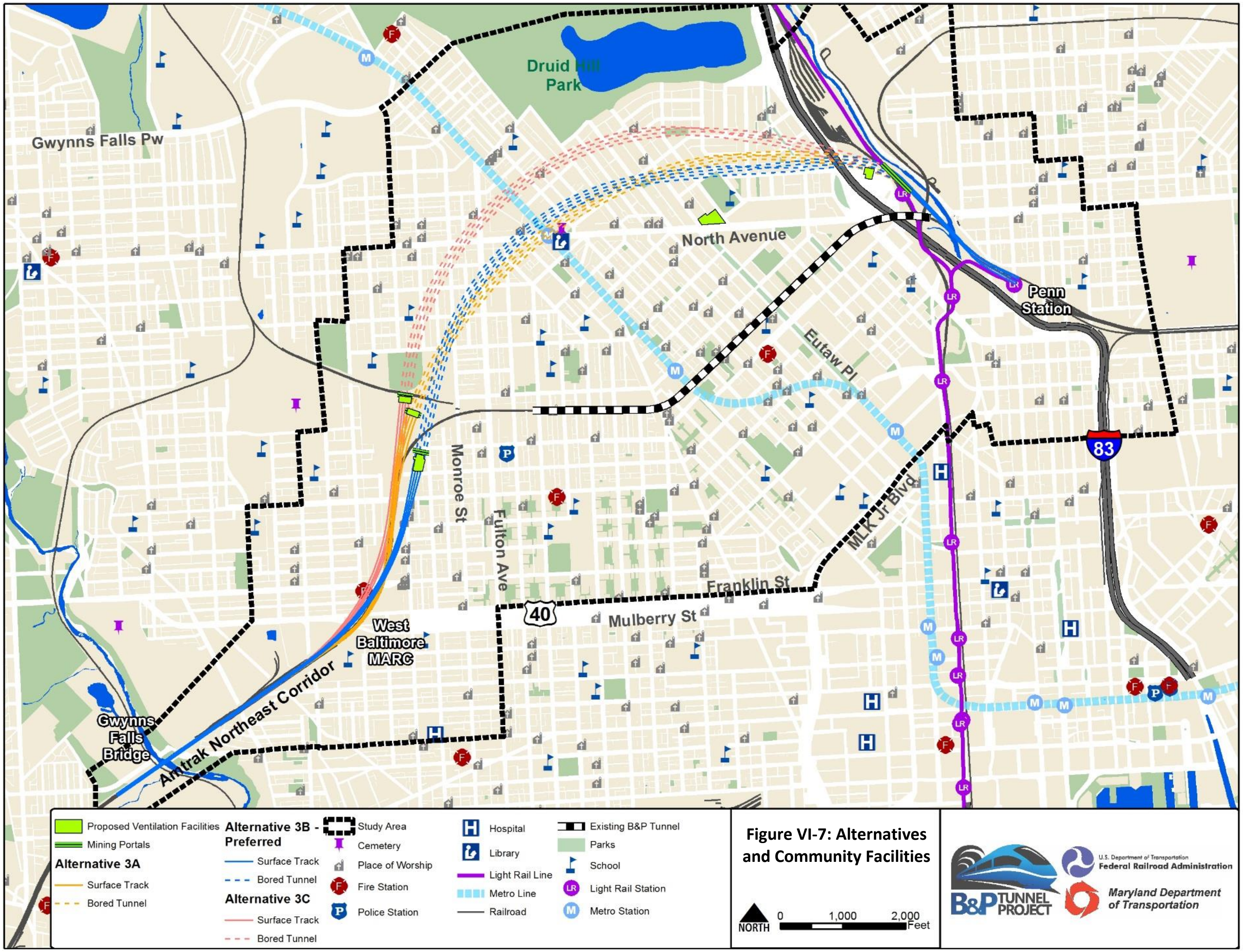


Figure VI-7: Alternatives and Community Facilities

Four places of worship, all located in the Midtown-Edmondson neighborhood would be displaced as a result of south portal construction, shown in **Table VI-9**. The places of worship are located at the edges of residential blocks that are adjacent to industrial land use in the Midtown-Edmonson neighborhood. The displacement of these places of worship would disrupt their respective operations, resulting in potential impacts to community services and networks. Existing community ties would likely be lost if facilities are not relocated within the same neighborhoods.

Table VI-9: Potential Community Facility Impacts

Community Facility	Address
Faith Christian Worship Center	700 N Pulaski Street
The Old Time Way Church of Deliverance	2100 W Lanvale Street
Freedom Church and Ministries	813 N Pulaski Street
Supreme Harvest Temple Ministries	2031-41 W Lafayette Avenue

In addition to the four displaced places of worship, the Preferred Alternative would displace 22 residential properties and six commercial and industrial properties, as a result of south portal construction, causing conversions in land use from industrial, residential, and commercial, to transportation. The conversion of residential and commercial land uses to transportation land use would alter the character of this majority residential urban neighborhood. However, the Preferred Alternative would roughly parallel the existing NEC railway and would not create new physical divisions or isolated pockets within the neighborhood.

Construction of the South Ventilation Facility is proposed to be located on the cut-and-cover portion above the south portal. The South Ventilation Facility structure would cause some visual impact to community character, in addition to neighborhood cohesion impacts caused by construction of the south portal.

The neighborhoods surrounding the surface portions of the Preferred Alternative including Jones Falls, Bridgeview/Greenlawn, Midtown-Edmondson and Reservoir Hill, would experience short-term construction impacts. These may include short-term lane or roadway closures causing changes in travel patterns and access to businesses, temporary closure of parking areas, possible noise and vibration disturbances, dust, and visual impacts from construction equipment and signing.

No parks or recreation areas would be directly impacted by right-of-way acquisition for the Preferred Alternative.

c. Alternative 3A

The alignment for Alternative 3A would be bored underground; therefore, neighborhood and community facility impacts would primarily occur at the north and south portal and Intermediate Ventilation Facility locations. The impacts from the north portal and Intermediate Ventilation Facility would be identical to those described under the Preferred Alternative above.

The south portal and South Ventilation Facility of Alternative 3A would be located near the existing NEC railway in the Bridgeview/Greenlawn and Midtown-Edmondson neighborhoods. Construction of the south portal would have impacts to two businesses including the P. Flanigan asphalt facility, which would result in impacts to neighborhood character and community cohesion. No residences or community facilities would be impacted by the south portal of Alternative 3A. Construction of the South Ventilation Facility is proposed to be located on the cut-and-cover portion above the south portal. The South Ventilation Facility structure would cause some visual impact to community character, in addition to neighborhood cohesion impacts caused by construction of the south portal. No parks or recreation areas would be directly impacted by right-of-way acquisition for Alternative 3A.

Temporary construction impacts to surrounding neighborhoods such as Jones Falls, Bridgeview/Greenlawn, Midtown-Edmondson, and Reservoir Hill would occur for Alternative 3A as described above under the Preferred Alternative.

d. Alternative 3C

The alignment for Alternative 3C would be bored underground; therefore, neighborhood and community facility impacts would primarily occur at the north and south portal and Intermediate Ventilation Facility locations. The impacts from the north portal and Intermediate Ventilation Facility would be identical to those described under the Preferred Alternative above.

The south portal and South Ventilation Facility of Alternative 3C would be located west of the existing NEC railway in the Bridgeview-Greenlawn neighborhood. Construction of the south portal would have impacts to community facilities, residential properties and businesses, which would result in impacts to neighborhood character and community cohesion. One community facility, the Fire Department Engine Co. 36, would be displaced by Alternative 3C. The south portal for Alternative 3C would require nine business displacements and 12 residential building demolitions. Construction of the South Ventilation Facility is proposed to be located on the cut-and-cover portion above the south portal. The South Ventilation Facility structure would cause some visual impact to community character, in addition to neighborhood cohesion impacts caused by construction of the south portal. No parks or recreation areas would be directly impacted by right-of-way acquisition for Alternative 3C.

Temporary construction impacts to surrounding neighborhoods such as Jones Falls, Bridgeview/Greenlawn, Rosemont, Midtown-Edmondson, and Reservoir Hill would occur for Alternative 3C as described above under the Preferred Alternative.

9. Visual and Aesthetic Resources

FRA Procedures for Considering Environmental Impacts (FRA, 1999) and guidance from the Federal Highway Administration (FHWA) Visual Impact Assessment for Highway Projects (FHWA, 1981) were used to identify visual and aesthetic quality within the Study Area. The discussion of visual and aesthetic resources in this chapter focuses on the assessment methodology and anticipated changes in the Study Area as a result of the Project.

a. Methodology

The FRA Procedures for Considering Environmental Impacts provide general guidance for identifying any significant changes likely to occur in the natural landscape and in the developed environment. The procedures suggest the EIS should also discuss the consideration given to design quality, art, and architecture in project planning and development. The FHWA methodology provides the following seven main components to the evaluation of visual and aesthetic quality.

1. **Define Project Viewshed/Physical Limits of Visual Environment:** The “Project viewshed” is the surface area visible from the Project site and within the Study Area. The Project viewshed is described in **Chapter V**.

2. **Determine Viewer Groups:** Viewer groups were divided into those with a view of the Project who would be affected by its visual elements. These include residents, workers, pedestrians, cyclists, educational institutions, recreational groups, and other commercial sites within the Study Area. Viewer groups also include those with a view from the Project, such as transit riders.

3. **Identify Key Viewpoints and Views and Assess Visual Quality:** The Project is located within a diverse urban corridor where no natural landscape features are located. Assessment of “visual quality” is based on “vividness,” “intactness,” and “unity.” The existing visual character of the Project area is a mix of commercial, residential, industrial, and transportation uses, and includes historic architecture elements within these land uses. **Chapter V** describes existing visual quality in the Project viewshed.

4. **Analyze changes in Existing Visual Resources and Viewer Response:** The alternatives would convert commercial, residential, industrial, and transportation land uses to entirely transportation land use. Residents of the Study Area would be the most affected viewer group by the Project. As the majority of the proposed alternatives are underground, viewer responses are expected to focus on portal, ventilation plant, and above-ground trackway locations.

5. **Depict Visual Appearance with the Project:** The visual appearance of the B&P Tunnel Project would consist of Project components that would be visible to viewer groups. The Project components include tunnel portals, ventilation plants, and trackway. The most visible components of the Project would be the tunnel portals and ventilation plants. The transitway would be largely underground.

6. **Assess the Project’s Visual Impacts:** The Project would have some visual impacts at ventilation plant and portal locations. The ventilation plant would be a new structure with a footprint of up to 100 feet by 200 feet and a height up to 55 feet within the visual landscape of the Project area. Portal locations may not have significant impacts as they would be located within existing transportation and industrial land use. There would also be visual impacts during construction, which would be temporary.

7. **Propose Methods to Mitigate Adverse Visual Impacts:** Adverse visual impacts will be mitigated through urban and landscape design to improve the visual and aesthetic quality and character of the Study Area.

Based on the criteria described above, general visual effects were assigned a rating of low, medium, or high based on the following factors: the nature of a project component, contextual compatibility between the visual component and its surroundings, changes to the visual landscape as a result of the visual component, and viewer sensitivity.

i. Nature of Project Components

The nature of the project component refers to the project design, size, and type of project element. In the analysis, the level of general visual effect (high, medium, or low) reflects the visibility of a component absent from context, location, or exposure to a specific viewing group. Therefore, the level is a reflection of the components’ general size and type. The components of the Project are listed below.

- Tunnel Portal
- Ventilation Plants
- Trackway
    - At-Grade
    - Underground

ii. Contextual Compatibility

Contextual compatibility explains how harmoniously a project component fits into the existing visual environment of the Project area. The visual effects of components can be either low, medium, or high.

Low Visual Effect: A component would have a low visual effect if a new element is introduced into the Project area that is the same or similar to the existing elements.

Medium Visual Effect: A component would have a medium visual effect if a new element is introduced that is different from the existing elements but is similar in scale, material, and aesthetic value.

High Visual Effect: A high visual effect is incurred if a new element is introduced to the Project area that is not similar to existing elements in scale, material, or aesthetic value.

iii. Changes to Visual Landscape

Changes in visual landscape requires the assessment of whether the Project brings change to or interruption of identified views or visual resources within the Project viewshed.

Low Visual Effect: A low visual effect occurs if the Project does not obstruct the existing viewshed from residential, commercial, or institutional properties, nor is it adjacent to primary pedestrian routes or a public space or platform.

Medium Visual Effect: The Project would have a medium visual effect if it moderately obstructs the viewshed from some residential, commercial, or institutional properties but is neither on a primary roadway or pedestrian route nor is located in an area of already compromised visual effect, nonadjacent to public space.

High Visual Effect: High visual effect occurs if the Project is adjacent to residential, commercial, or institutional properties is highly visible from the primary roadway, retail locations, public space or residences; and is highly visible from primary pedestrian route or obstructs the existing viewshed.

iv. Viewer Sensitivity

Viewer sensitivity refers to the level of expected response to the introduction of project components based on the frequency and duration of the exposure of the viewer to the project components. Expected response and visual sensitivity varies based on the type of viewer group. People who are least exposed to or spend the least time in the Project area would have the lowest visual sensitivity to changes in the Project area, while the viewer group that spends the most time within the Project area would be the most sensitive to visual changes. These groups and viewer sensitivity are described in **Table V-10,** below.

Table VI-10: Visual Sensitivity

Viewer Group	Description	General Visual Sensitivity
Transitory	People who only travel through the Project area to another location. May include drivers, cyclists, transit riders or pedestrians.	Low
Limited Exposure	People who may stay within the Project area for an extended period but do not have a long-term interest in property in or adjoining the Project study corridor; includes workers, shoppers, tourists, or other visitors.	Medium
Permanent	People who hold a long-term interest in property in or adjoining the Project study corridor; generally includes residents, business owners, and other property owners or renters.	High

b. Changes to existing viewsheds as a result of the Project

The B&P Tunnel Project would result in visual and aesthetic quality changes to the surrounding environment, during and after construction. The following analysis assesses changes to existing viewsheds and is based on the methodology presented in **Section V.A.7**. A summary of effects to visual and aesthetic resources from the No-Build Alternative and the build alternatives is presented in **Table VI-11**.

Table VI-11: Summary of Effects to Aesthetics and Visual Resources

Alternative	Project Components	Contextual Compatibility	Change in Visual Landscape	Viewer Sensitivity	Overall Visual Effect
Alternative 3A (52 Percent underground)	North Portal, North Ventilation Facility, and trackway	Low visual effect	Low visual effect	Low general sensitivity	MEDIUM
	Intermediate Ventilation Facility	High visual effect	Medium visual effect	High general sensitivity	
	South Portal and South Ventilation Facility	Low visual effect	Low visual effect	High general sensitivity	
	South Trackway	Low visual effect	Low visual effect	Low general sensitivity	
Preferred Alternative (56 Percent underground)	North Portal, North Ventilation Facility, and trackway	Low visual effect	Low visual effect	Low general sensitivity	HIGH
	Intermediate Ventilation Facility	Medium visual effect	Medium visual effect	High general sensitivity	
	South Portal and South Ventilation Facility	Medium visual effect	High visual effect	High general sensitivity	
	South Trackway	Medium visual effect	Medium visual effect	Low general sensitivity	
Alternative 3C (58 percent underground)	North Portal, North Ventilation Facility, and trackway	Low visual effect	Low visual effect	Low general sensitivity	HIGH
	Intermediate Ventilation Facility	High visual effect	Medium visual effect	High general sensitivity	
	South Portal and South Ventilation Facility	Medium visual effect	High visual effect	High general sensitivity	
	South Trackway	Medium visual effect	Medium visual effect	Low general sensitivity	

a. Alternative 1: No-Build

There would be no long- or short-term impacts to visual and aesthetic resources associated with this alternative. The existing visual conditions would not change.

b. Preferred Alternative

A majority of the Preferred Alternative would be an underground tunnel and would not be visible. Changes to visual and aesthetic resources would result from three project components: tunnel portals, ventilation facilities, and the new tracks and railroad bed at each end of the portals (trackway). Changes are assessed in terms of low, medium or high visual effect for contextual compatibility, changes to visual landscape, and viewer sensitivity. Measures for low, medium or high visual effect are described in detail in **Chapter V, Section A.8.** These changes would occur within four viewsheds along the general project corridor, including:

- The location of the new northern trackway, the north portal, and North Ventilation Facility in the east Jones Falls area;
- The location of the Intermediate Ventilation Facility in the Reservoir Hill neighborhood;
- The location of the south portal and South Ventilation Facility in the Bridgeview/Greenlawn and Midtown-Edmondson neighborhoods; and
- The new trackway south of the south portal location.

The north portal and North Ventilation Facility would be in the east Jones Falls area; the trackway located north of the north portal is also located in the east Jones Falls area, where it ties into the existing NEC trackway. For the Preferred Alternative, introduction of the north portal, North Ventilation Facility, and trackway into the respective viewshed would result in overall low impacts to the viewshed. The north portal, North Ventilation Facility, and trackway are visually compatible with the existing transportation land use context. The components would not obstruct the existing transportation-heavy landscape from residential, commercial, or institutional properties, resulting in a low visual effect. Finally, the components would have low general visual sensitivity, as the primary viewer groups at this location are transitory. The change in visual and aesthetic resources at the location for the north portal and North Ventilation Facility for the Preferred Alternative is shown in **Chapter IV.** See **Figures IV-23** through **IV-27**.

The Intermediate Ventilation Facility would be located in the Reservoir Hill neighborhood along the North Avenue corridor. Introduction of the Intermediate Ventilation Facility would result in medium impacts to the viewshed. The Intermediate Ventilation Facility would be visually compatible with the existing commercial corridor. The Intermediate Ventilation Facility would have high general visual sensitivity, as the primary viewer groups at this location are permanent residents as well as transitory viewer groups.

The south portal and South Ventilation Facility would be adjacent to industrial buildings and existing tunnel trackway in the Bridgeview/Greenlawn and Midtown-Edmondson neighborhoods; the trackway railroad south of the south portal would also be located in this area, where it ties into the existing NEC trackway. Introduction of the south portal and South Ventilation Facility into the respective viewshed would result in overall high impacts to the viewshed. While the components would be partially located within and adjacent to existing industrial and transportation land uses, they would also be located within existing residential land use, and would not be visually compatible with this land use. The components would result in a medium visual effect, as they would obstruct the existing visual landscape from residential properties that are proximal, but not directly adjacent to, the existing B&P Tunnel. Finally, the components would have high general visual sensitivity, as the primary viewer groups, including residents and business owners, are permanent.

The trackway located south of the south portal would have overall medium visual effects from the surrounding transportation right-of-way viewshed. The trackway would cross below a modification of the existing roadway bridge at West Lafayette Avenue, and would cross below the existing roadway bridge at Edmondson Avenue; therefore, it would not change any elements of the existing visual landscape. Viewer sensitivity is low due to the transitory nature of the primary viewer groups.

The change in visual and aesthetic resources at the location for the south portal and South Ventilation Facility under the Preferred Alternative is shown in **Chapter IV.** See **Figures IV-17** through **IV-22**.

c. Alternative 3A

The northern trackway, north portal and North Ventilation Facility would be in the east Jones Falls area. Under Alternative 3A, introduction of the north portal, North Ventilation Facility, and trackway into the respective viewshed would result in overall low impacts to the viewshed.

The north portal, North Ventilation Facility, and trackway are visually compatible to the existing transportation land use context. The components would not obstruct the existing transportation-heavy landscape from residential, commercial, or institutional properties, resulting in a low visual effect. Finally, the components would have low general visual sensitivity, as the primary viewer groups at this location are transitory.

The impacts from the Alternative 3A Intermediate Ventilation Facility would be identical to those described under the Preferred Alternative.

The south portal and South Ventilation Facility would be adjacent to industrial buildings and existing tunnel trackway in the Bridgeview/Greenlawn and Midtown-Edmondson neighborhoods; the trackway south of the south portal is also located in this area, where it ties into the existing NEC trackway. Introduction of the south portal, south portal ventilation plant, and trackway into the respective viewshed would result in low visual effect with respect to context and landscape changes. These components would occur only within existing industrial and transportation land uses, and would be visually compatible with these land uses. The components would not cause new obstructions from residential, commercial, or institutional properties within the existing landscape, resulting in a low visual effect. The components would have high general visual sensitivity, as the primary viewer groups, including residents and business owners, are permanent.

The trackway located south of the south portal would have low visual effects. The trackway would tie in to the existing transportation right-of-way used by the B&P Tunnel as it crosses below the existing roadway bridges at West Lafayette Avenue and Edmondson Avenue; therefore, it would not change any elements of the existing visual landscape. Viewer sensitivity is low due to the transitory nature of the primary viewer groups.

d. Alternative 3C

The northern trackway, north portal and North Ventilation Facility would be in the east Jones Falls area. Under Alternative 3C, introduction of the north portal, North Ventilation Facility, and trackway into the respective viewshed would result in overall low impacts to the viewshed.

The north portal, North Ventilation Facility, and trackway are visually compatible to the existing transportation land use context. The components would not obstruct the existing transportation-heavy landscape from residential, commercial, or institutional properties, resulting in a low visual effect. Finally, the components would have low general visual sensitivity, as the primary viewer groups at this location are transitory.

The impacts from the Alternative 3C Intermediate Ventilation Facility would be identical to those described under the Preferred Alternative.

The south portal and South Ventilation Facility would be adjacent to industrial buildings and existing tunnel trackway in the Bridgeview/Greenlawn, Rosemont and Midtown-Edmondson neighborhoods; the trackway railroad south of the south portal would also be located in this area, where it ties into the existing NEC trackway. Introduction of the south portal and South Ventilation Facility into the respective viewshed would result in overall high impacts to the viewshed. While the components would be partially located within and adjacent to existing industrial and transportation land uses, they would also be located within existing residential land use, and would not be visually compatible with this land use. The components would result in a medium visual effect, as they would obstruct the existing visual landscape from residential properties that are proximal, but not directly adjacent to, the existing B&P Tunnel. Finally, the components would have high general visual sensitivity, as the primary viewer groups, including residents and business owners, are permanent.

The trackway located south of the south portal would have overall medium visual effects from the surrounding transportation right-of-way viewshed. The trackway would cross below a modification of the existing roadway bridge at West Lafayette Avenue, and would cross below the existing roadway bridge at Edmondson Avenue; therefore, it would not change any elements of the existing visual landscape. Viewer sensitivity is low due to the transitory nature of the primary viewer groups.

10. Mitigation

Coordination among federal, state, and local agencies, as well as community members, has been continuous throughout the B&P Tunnel Project. Continued coordination among these agencies and community members, including affected property owners, would continue to promote the Project's compatibility with local land use and transportation plans. Changes to land use and zoning from the acquisition of right-of-way as well as potential short and long-term impacts to road and transit infrastructure would be coordinated with the City of Baltimore and MTA.

Specific actions proposed as part of the Preferred Alternative to mitigate socioeconomic impacts are detailed below, organized by the categories of Community, Economy, and Transportation. Although the following mitigation measures correspond with the Preferred Alternative, similar mitigation measures would be appropriate to mitigate socioeconomic impacts of Alternative 3A and Alternative 3C. The outcomes and effectiveness of mitigation efforts will be monitored by a designated lead agency, which will implement detailed tracking procedures and provide public reporting. The lead agency will be designated during the final design phase. For a list of all Preferred Alternative mitigation actions and additional detail, see **Chapter VII**.

a. Community

The Preferred Alternative includes establishment of a fund to support community development within affected communities. Examples of community development activities include but are not limited to economic development projects, installation of public facilities, community centers, public services, small business assistance, or homeowner assistance. The fund will provide grant money for operating expenses and capital projects to not for profit community development organizations that serve communities within the corridor. Funds will be awarded to organizations that are active within ¼ mile of the Project alignment that meet published eligibility criteria.

Property acquisition activities, including relocations, will be performed in accordance with the *Uniform Relocation Assistance* and *Real Properties Acquisition Act of 1970* (Uniform Act) as amended. Displaced people and businesses may be eligible for benefits under Maryland's Relocation Assistance Program. Benefits could include: advisory services, moving and reestablishment costs and other payments and services as provided by law. The owner of a displaced business is entitled to receive payment for actual reasonable expenses incurred in moving the business, or personal property; for actual direct losses of tangible personal property; and for actual reasonable expenses incurred in the search for a replacement site. For larger businesses impacted by the Preferred Alternative, finding suitable replacement sites could be more difficult. Fair market value would be provided to all property owners as compensation for land acquisition. Displaced small business owners may be eligible for reestablishment expenses.

The Preferred Alternative will also include establishment of a fund for maintenance of and improvement to publicly-owned parks and recreation facilities within affected communities. Parks and recreation facilities receiving funding should be located within ¼ mile of the Preferred Alternative alignment. The Preferred Alternative will also include separate funding to support the improvement or establishment of community gardens, vacant lot greening, and/or the establishment of improvement of public open space within ¼ mile of the Project alignment.

The Preferred Alternative will include a mechanism for public comment in the design and landscaping of project facilities such as portals, ventilation facilities, and other visible project structures. It will include visual screening of ventilation facilities adjacent to schools and other community facilities.

b. Economy

The Preferred Alternative includes coordination by the project sponsor with local job training organizations to:

1) Facilitate targeted job training by providing estimates of the type, number, and timing of jobs expected to be created by project contractors,

2) Include in construction contracts goals for nationally targeted workers of social and economic disadvantage; and

3) Require project contractors to report on a regular basis their progress in meeting contract goals. The Preferred Alternative will include public reporting on job creation.

c. Transportation

The Preferred Alternative will include funding for streetscape infrastructure, pedestrian and bicycle access improvements within ½ mile of the Preferred Alternative alignment, with emphasis on access to the West Baltimore MARC Station. Examples include landscaping and street trees, bus stop facilities, benches, trash cans, lighting, sidewalk repairs, bike lanes, crosswalk striping and signaling, traffic calming measures, ADA accessibility, street and sidewalk cleaning, and/or public art.

The Preferred Alternative includes development and implementation of a Maintenance of Traffic Plan which provides protection for safe pedestrian, bicycle, and vehicular movement around work sites during construction and maintains connectivity where possible. The plan should account for truck haul routes, construction traffic concerns, and should help to minimize transportation impacts during construction. The plan should account for community resources such as schools and parks and include security fencing for public safety.

The Preferred Alternative will include stabilizing and securing the existing B&P Tunnel for potential future rail transportation use. This will serve to ensure the ongoing safety of the existing B&P Tunnel while it is not being used, while still allowing for potential future re-use as part of a separate project or initiative.

The Preferred Alternative includes replacement of all impacted station facilities at the West Baltimore MARC Station and rebuilding the facility in compliance with ADA regulation. Furthermore, the Preferred Alternative includes additional amenities at the West Baltimore MARC Station relative to what currently exists. Improved amenities such as security lighting, full platform canopies, or public art may be considered.

B. Public Health and Safety

1. Public Health

a. Alternative 1: No-Build

No impacts to public health would occur under this alternative.

b. Preferred Alternative

No impacts to public health from the Preferred Alternative are anticipated. The Preferred Alternative would conform to federal and state air quality standards, as discussed in **Section VI.H**. The Preferred Alternative would have no significant effects to air quality in the Study Area; the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No Build (Alternative 1) and the 2040 Build scenario (Preferred Alternative) would be below *de minimis* levels, provided by the USEPA.

Noise impacts were assessed using FTA guidelines, detailed in **Section VI.I.** The Preferred Alternative would have impacts to 437 properties, of which 141 properties would be severely impacted. The severe impacts would be at residential areas nearest the railroad between the West Baltimore MARC Station and the south portal shown in **Section VI.I**. The Preferred Alternative includes multiple mitigation measures to mitigate anticipated operational noise impacts, including noise barriers. Noise barriers would be designed to reduce the severe noise impacts to levels below the FTA severe impact criteria.

The Preferred Alternative may also have temporary noise impacts during construction at residences and other sensitive receptors along the Project alignment. The Preferred Alternative includes the development and implementation of a Construction Noise Mitigation Plan to reduce potential construction noise impacts, which is discussed further in **Section VI.I** and **Chapter VII**.

As discussed in **Section VI.F**, additional detail is needed regarding the potential for the Preferred Alternative to encounter contaminated soil and groundwater during construction near sites contaminated with hazardous material. The Preferred Alternative would be designed and constructed in accordance with *NFPA 130: Standard for Fixed Guideway Transit for Passenger Rail Systems*. If a public health and safety concern is identified during future hazardous materials investigations, provisions within the investigation Health and Safety Plan (HASP) will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

c. Alternative 3A

No impacts to public health from Alternative 3A are anticipated. The Alternative 3A would conform to federal and state air quality standards, as discussed in **Section VI.H** and in the DEIS. Alternative 3A would have no significant effects to air quality in the Study Area; the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No Build (Alternative 1) and the 2040 Build scenario (Alternative 3A) would be below de minimis levels, provided by the USEPA. See the DEIS for more information.

Noise impacts were assessed using FTA guidelines, detailed in **Section VI.I**. The Alternative 3A would have noise impacts to 254 properties, all of which would be moderately impacted. No impacts in exceedance of FTA severe impact criteria would occur. Alternative 3A may also have temporary noise impacts during construction at residences and other sensitive receptors along the Project alignment as described above for the Preferred Alternative.

As discussed in **Section VI.F**, additional detail is needed regarding the potential for Alternative 3A to encounter contaminated soil and groundwater during construction near sites contaminated with hazardous material. The alternative would be designed and constructed in accordance with NFPA 130: Standard for Fixed Guideway Transit for Passenger Rail Systems. If a public health and safety concern is identified during future hazardous materials investigations, provisions within the investigation Health and Safety Plan (HASP) will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

d. Alternative 3C

No impacts to public health from Alternative 3C are anticipated. The Alternative 3C would conform to federal and state air quality standards, as discussed in **Section VI.H** and in the DEIS. Alternative 3C would have no significant effects to air quality in the Study Area; the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No Build (Alternative 1) and the 2040 Build scenario (Alternative 3C) would be below de minimis levels, provided by the USEPA. See the DEIS for more information.

Noise impacts were assessed using FTA guidelines, detailed in **Section VI.I**. The Alternative 3C would have noise impacts to 1,090 properties, 111 of which would be severe impacts per FTA criteria. The remainder would be moderately impacted. Noise barriers would be designed to reduce the severe noise impacts to levels below the FTA severe impact criteria. Alternative 3C may also have temporary noise impacts during construction at residences and other sensitive receptors along the Project alignment as described above for the Preferred Alternative.

As discussed in **Section VI.F**, additional detail is needed regarding the potential for Alternative 3C to encounter contaminated soil and groundwater during construction near sites contaminated with hazardous material. The alternative would be designed and constructed in accordance with NFPA 130: Standard for Fixed Guideway Transit for Passenger Rail Systems. If a public health and safety concern is identified during future hazardous materials investigations, provisions within the investigation Health and Safety Plan (HASP) will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

2. Safety

a. Alternative 1: No-Build

No impacts to public safety would occur under this alternative. While the current tunnel is safe to operate, potential impacts to public safety within the Study Area, as well as users of the existing tunnel may occur in the long-term operations of this alternative, as the existing B&P Tunnel would not include current comprehensive life safety approaches.

Alternative 1: No-Build is subject to the Common Carrier Obligation, currently in place, which prohibits railroads from refusing reasonable requests for their service. The Common Carrier Obligation permits transportation of hazardous materials in accordance with USDOT and FRA safety regulations.

b. Preferred Alternative

The Preferred Alternative would conform to the comprehensive life safety approach included in the NFPA Standard for Fixed Guideway Transit and Passenger Rail Systems-NFPA 130. These standards provide regulations for fire safety requirements in underground, surface, and elevated fixed guideway transit and passenger rail systems, including stations and tunnels. NFPA-130 outlines the requirements for emergency ventilation systems, emergency procedures, communication and control systems, and for life safety from fire through infrastructure design and fire protection system attributes. Implementation of these regulations would improve tunnel conditions compared to Alternative 1: No-Build.

As with the implementation of any new transportation project, there is the potential for impacts to occur to the general Study Area public, as well as users of the proposed infrastructure. These potential impacts to general public safety may occur during construction and/or operation of the Preferred Alternative. However, these potential safety impacts would be mitigated to the fullest possible extent.

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains on the NEC, which apply regardless of whether the Preferred Alternative is implemented. Also, the railroads that use the B&P Tunnel have a Common Carrier Obligation, which prohibits them from refusing reasonable requests for their service, including transportation of hazardous materials. All freight operations would be subject to safety regulations in accordance with USDOT and FRA. USDOT and FRA safety regulations include container labeling, container durability standards, emergency response information and safety and security plans. USDOT safety provisions for hazardous material transportation include specific rules regarding labeling and placarding, time-of-day restrictions, specifications for tank cars, general requirements and packaging specifications, among others. In addition, local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel.

c. Alternative 3A

All safety considerations for Alternative 3A would be identical to those described above for the Preferred Alternative. Alternative 3A would conform to the comprehensive life safety approach included in the NFPA Standard for Fixed Guideway Transit and Passenger Rail Systems-NFPA 130.

d. Alternative 3C

All safety considerations for Alternative 3C would be identical to those described above for the Preferred Alternative. Alternative 3C would conform to the comprehensive life safety approach included in the NFPA Standard for Fixed Guideway Transit and Passenger Rail Systems-NFPA 130.

3. Children's Health and Safety

Children's health was assessed in accordance with US Environmental Protection Agency Executive Order 13045. *Protection of Children from Environmental Health Risks and Safety Risks.* Comprehensive and extensive analyses of air quality, noise, water, soils, and hazardous material have been conducted for the Project.

a. Alternative 1: No-Build

No disproportionate impacts to children's health would occur under this alternative.

b. Preferred Alternative

Air Quality

Comprehensive analysis of air quality impacts has been conducted for the project and is detailed in **Section VI.H**. Overall, the Preferred Alternative would have no significant effects to air quality in the Study Area, as the net change in emissions of $NO_{x,}$ VOC, and $PM_{2.5}$ between 2040 No Build (Alternative 1) and the 2040 Build (Preferred Alternative) scenario would be below *de minimis* levels. Increased diesel emissions would be due to MARC trains, there is no projected increase in diesel freight train operations through the B&P Tunnel and no significant air emissions generated by electric locomotive trains.

The proposed location for the Intermediate Ventilation Facility at 900-940 North Avenue is located adjacent to John Eager Howard Elementary School. In accordance with the Clean Air Act General Conformity Thresholds, emissions associated with the ventilation facility would not cause, or substantially contribute to a violation of NAAQS, established by the US Environmental Protection Agency (USEPA), to protect human health and welfare, including children (see **Section VI.H.4**).

Air polluting emissions from construction equipment, as well as dust control measures will be implemented in accordance with local construction regulations. The Preferred Alternative includes the development and implementation of a Construction Emission Reduction Plan.

Water

The Preferred Alternative would have no impact to drinking water or recreational waters as described in **Section VI.E.3.** Thus, there is no risk to children's welfare cause by impacts to water quality.

Soil and Hazardous Material

Children could be exposed to existing hazardous materials, such as vapors, mobilized as waste material if present within the tunnel limits of disturbance. In addition, materials and chemicals brought to the project site to aid in the construction process could experience an uncontrolled release due to mishandling or an accident. Further discussion of identified hazardous sites within the Study Area can be found in **Section VI.F.**

The Preferred Alternative is likely to encounter contaminated soil and groundwater during construction activities near contaminated sites. As discussed in **Section VI.F,** there are 112 sites of concern within 1 mile of the Preferred Alternative. Additional specific information for sites impacted by the Preferred Alternative will be collected once design is complete. Once type and extent of contamination and details of construction are known, potential risk and exposure can be assessed and appropriate documentation in place.

Contaminated soil and/or groundwater encountered during construction will be treated in accordance with federal, state, and local regulations. Any contaminants detected above MDE screening levels, soil and/or groundwater will be handled in accordance with applicable laws and regulations and disposed of at an MDE-approved treatment and/or disposal facility. Excavated soil will be contained onsite to avoid offsite migration. These measures will aid in limiting contaminated soil and/or groundwater exposure to children. Mitigation measures for contaminated sites are further discussed in **Section VI.F**.

Based on the above, the Preferred Alternative would pose no health or safety risks that would disproportionately affect children.

c. Alternative 3A

Alternative 3A would not differ substantially from the Preferred Alternative, as described above, regarding children's health and safety. The hazardous materials sites of concern for Alternative 3A are discussed in Section VI.F.

d. Alternative 3C

Alternative 3C would not differ substantially from the Preferred Alternative, as described above, regarding children's health and safety. The hazardous materials sites of concern for Alternative 3C are discussed in Section VI.F.

4. Mitigation

Specific actions proposed as part of the Preferred Alternative to mitigate safety impacts are detailed below. Although the following mitigation measures correspond with the Preferred Alternative, similar mitigation measures would be appropriate to mitigate safety impacts of Alternative 3A and Alternative 3C.

The Preferred Alternative would be designed to prevent public access and ensure safety to permanent and transitory individuals in the surrounding areas during operation. Particular attention will be given to maintaining public safety during the construction period. Public access to construction areas will be limited to the greatest extent possible. This can be accomplished with temporary fencing, warning signs and other safety precautions.

In order to mitigate potential emergency situations, particularly for users of the proposed tunnel, the Preferred Alternative would implement comprehensive life safety approaches. The Preferred Alternative would be designed and constructed in accordance with the National Fire Protection Association's Standard for Fixed Guideway Transit and Passenger Rail Systems—NFPA 130. Systems that will be designed and constructed in accordance with NFPA 130 will include the systems described below.

a. Emergency Ventilation

A mechanical ventilation system is required for tunnels longer than 1,000 feet, in accordance with design standards. The system can be comprised of either a set of ventilation buildings that provide ventilation of exhaust and supply of fresh air at specific locations, a set of jet fans for each track, or a combination. If used, jet fans should be located on the opposite side of the egress walkway to prevent excessive air speeds in the egress path. The fans will be capable of 100 percent reversible flow in order to control the propagation of smoke and hot gases away from the direction of egress. The size and power requirements for the fans is determined by a tunnel ventilation analysis. This analysis and subsequent final design will ensure the proper delineation of ventilation zones typically related to the longest operating train consist and the operating characteristics of the tunnel needed to meet projected travel demand, and to ensure proper isolation and mitigation of smoke and hot gases within an area occupied by an incident train.

b. Emergency Exits

Emergency exits will be designed in accordance with NFPA 130 as well as NFPA 101, Life Safety Code. Typically, the emergency exit locations will also provide tunnel access for emergency responders. A Fire Alarm Control Panel (FACP) and other incident command response interfaces will be accessible at the designated access locations. The maximum distance between exits to surface will not exceed 2,500 feet. Exits consist of fire-resistant enclosed stairways and passageways. Emergency exit enclosures will be separate from ventilation facilities, although they may be adjacent to them.

Exit stairs should have maximum riser heights of 7 inches, minimum tread depths of 11 inches, and minimum clear widths of 44 inches with allowance for handrail encroachment of 3-1/2 inches. Landings can be a maximum of 12 feet apart, and a minimum clear height should be 6 feet 8 inches.

In a multi-track tunnel environment with an appropriate rated divider wall or separate track tunnels, cross passageways may be used in lieu of or as a complement to conventional exits. The cross passageway would convey people to a tenable environment isolated through fire rated openings. Where incorporated, cross passageways are situated at 800-foot intervals.

All emergency exits will be properly labeled at the point of exit along with additional signage at intervals within the tunnel delineating the distances to the next exit point in either direction.

c. Walkways

Walkways are designed to allow passengers to evacuate a train at any point along the tunnels and proceed to the nearest position of safety. The walkways provide an unobstructed clear width transitioning from a minimum of 24 inches at the walkway surface to 30 inches at 62 inches above the walkway surface to 17 inches at 80 inches above the walkway surface. Although NFPA 130 does not state the maximum gap between the train and the walkway, the walkways are designed to minimize the gap between the walkway and the train such that evacuating passengers can safely exit the train onto the walkway without falling into the gap or injuring themselves.

d. Blue Light Stations

A Blue Light Station is a location along the tunnel, indicated by a blue light fixture, designating where an emergency exit is located and where emergency service or authorized personnel can use an emergency phone to communicate with the Operations Control Center (OCC). If necessary, trained personnel can disconnect traction power from an adjacent track via switches within the Blue Light Station’s protective enclosure. In addition, the Blue Light Stations will provide access and storage to firefighting equipment including extinguishers, hose lines, and standpipe connections.

Blue Light Stations will be located in accordance with NFPA 130, which includes but is not necessarily limited to, emergency exits, cross-passageways at 800 feet (where utilized), emergency access points, and any other approved locations.

Each Blue Light Station has a unique identification code as established by Amtrak. This identification will be marked on the enclosure in a prominent manner and be known to the staff at the OCC to aid in response.

e. Fire Standpipe Systems

The tunnels will be provided with standpipe systems, which will be predominantly dry systems in unattended, unoccupied environments exposed to freezing temperatures. The fire standpipe system will be Class I Fire designed in accordance with appropriate Maryland fire codes and Amtrak requirements.

The standpipe system for each sectionalized zone will consist of a fire standpipe main (minimum 6 inches in diameter due to the fill time requirement of NFPA 130 and tunnel length) and hose valves installed at the regular intervals of 250 feet spacing (maximum 275-foot limit). The fire hose valves should be 2-1/2 inches, and be provided with caps and chains. These valves will be located so that any point within the tunnel may be reached with 125 feet of hose length brought in by first responders. Each fire hose valve will be provided with a specific identifying nameplate consistent with Amtrak standards which also shows location identification.

Each trainway of the tunnel will have its own separate complete fire standpipe main. It will have fire department connections (FD.C.s), hose valves, sectionalizing valves and alarms. The standpipe mains will remain accessible for easy inspections, maintenance and repair. The standpipe system will be maintained with fire department connections at grade. The FD.C.s would be used by the fire department to supply water and pressurize the system. Each FD.C. will be located within 100 feet of fire truck access and within 100 feet of a fire hydrant. FD.C.s will be provided at tunnel emergency exit locations. If there are no existing street fire hydrants which are suitable for fire department use within 100 feet of the FD.C. then the existing hydrants would be upgraded, or new hydrants would be installed, in coordination with the municipal water supply.

Water flow and supervisory alarms will be provided for the standpipe systems in each tunnel, and the signal will be sent to the local Amtrak FACP. All FACP's should interface with the Amtrak Central Command Center.

f. Emergency Management Plan

The Preferred Alternative will include development of an Emergency Management Plan to be implemented in the event of a tunnel emergency.

C. Cultural Resources

1. Historic Architecture

An effect to a historic property occurs when there is an alteration to the characteristics of an historic property qualifying it for inclusion in or eligibility for the NRHP (36 CFR Part 800.16(i)). For those properties that are potentially affected, the criteria of adverse effect from Section 106 of the NHPA were applied (36 CFR Part 800.5(a)(1)). An adverse effect to an historic property is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify it for inclusion in the NRHP in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association. The following examples of adverse effects (36 CFR Part 800.5(a)(2)) were considered in relation to the Preferred Alternative and Alternatives 3A and 3C:

- (i) – Physical destruction of, or damage to all or part of the property;
- (ii) – Alteration of a property including: restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access that is not consistent with the Secretary of the Interior’s *Standards for the Treatment of Historic Properties* (36 CFR Part 68) and applicable guidelines;
- (iii) – Removal of the property from its historic location;
- (iv) – Change of the character of the property’s use or of physical features within the property’s setting that contribute to its historic significance;
- (v) – Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property’s significant historic features;
- (vi) – Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

- (vii) – Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

a. No-Build Alternative

The No-Build Alternative would have no effect on historic properties.

b. Preferred Alternative

The Preferred Alternative would have an adverse effect to historic properties. The Preferred Alternative includes refinements made since the DEIS to reduce impacts to historic resources. These refinements are described in **Chapter III**. **Table VI-12** provides a breakdown of effects to each of the seventeen architectural historic properties identified within the historic architectural APE (**Figure VI-8**). The Preferred Alternative would have an adverse effect on nine of these seventeen historic properties. As part of the Undertaking, the existing tunnel would essentially be "mothballed" and sealed, thus retaining it for a potential future transportation use. While the Preferred Alternative would still have an adverse effect on the B&P Railroad, the tunnel work would follow the Secretary of the Interior's Standards for the Treatment of Historic Properties.

In addition, sections of the NEC would be taken out of service, including portions of the railroad alignment that contribute to the B&P Railroad historic district. Their disposition has not yet been determined so the assessment of effects to these historic properties is not possible at this time.

FRA's continued consultation with MHT and other consulting parties to resolve the adverse effects (36 CFR Part 800.6(a)), including incorporation of their comments into the process of refining and selecting the Preferred Alternative, has aided in avoiding and minimizing adverse effects. Consulting parties' comments with regard to effects to historic properties have included the following:

- Effects to the B&P Railroad tunnel as a result of this undertaking.
- The proposed size and location of the Intermediate Ventilation Facility in the Reservoir Hill Historic District and the overall high historic integrity of this District.
- Concerns about possible vibration impacts through the tunnels underneath the Reservoir Hill Historic District.
- Effects to a large number of contributing elements, including visual effects of the new retaining walls and potential size of the South Ventilation Facility, in the Midtown Edmondson Historic District.
- Effects to the American Stores Company Warehouse, Ward Baking Company, and Fire Department Engine House No. 36, all individually eligible for NRHP listing and contributing elements to the Midtown Edmondson Historic District.
- Effects to historic properties along Edmondson Avenue, which was historically a main thoroughfare for the West Baltimore area.
- The importance of the American Ice Company, especially its historic significance and visibility in the West Baltimore community.

More details of individual architectural historic property effects are provided in the *Architectural Historic Properties Effects Assessment Report*. On November 20, 2015, MHT concurred with FRA's adverse effect determination. FRA also prepared a technical memorandum containing updates to the identified list of historic properties, adjusted mapping, additional property evaluations, and revised effects assessments due to revisions to Alternative 3B which were incorporated into the Preferred Alternative. The document also includes a clarification to the B&P Railroad historic district boundary. This memorandum, which did not change the overall adverse effect finding, was submitted to MHT and other consulting parties for review and comment on July 28, 2016, with concurrence received on October 11, 2016. Consulting parties' correspondence, including concurrence on the adverse effect finding from MHT, can be found in **Appendix B**.

c. Alternative 3A

Alternative 3A would result in an adverse effect to six historic properties, including the Baltimore and Ohio Belt Line Railroad, Baltimore and Ohio Belt Line Bridge over Jones Falls Valley, Baltimore & Potomac Railroad, Reservoir Hill Historic District, Midtown-Edmondson Historic District, and Bridge BC 2410. More information is available in the DEIS.

d. Alternative 3C

Alternative 3C would result in an adverse effect to 10 historic properties, including the Baltimore and Ohio Belt Line Railroad, Baltimore and Ohio Belt Line Bridge over Jones Falls Valley, Baltimore & Potomac Railroad, Reservoir Hill Historic District, Midtown-Edmondson Historic District, Bridge BC 2410, Greater Rosemont Historic District, Edmondson Avenue Historic District, Ward Baking Company, and Fire Department Engine House No. 36. More information is available in the DEIS. The Fire Department Engine House No. 36 and Ward Baking Company buildings have been identified by Project Consulting Parties as particularly high-priority for preservation.

2. Archaeology

The results of the *Phase IA Archaeological Study* show that although large portions of the Study Area have been disturbed, the potential for both pre- and post-contact archaeological sites still exists. While the subsurface integrity is probably poor for most areas within the project APE, an occasional intact archaeological site could be encountered. It is anticipated that the Study Area has a higher potential for containing post-contact sites than pre-contact sites. These suppositions are based on previous discoveries of intact archaeological sites in and around the Study Area, as well as the land use history of this portion of Baltimore City.

Due to the preliminary design stage of the B&P Tunnel Project at this time, the potential size and configuration of the archaeological APE, as well as the uncertainty of project variables pertaining to anticipated ground disturbance (e.g. cut-and-cover locations, cut locations, ventilation shaft locations), detailed archaeological identification and effects studies will be undertaken at a later date as described in the Section 106 Programmatic Agreement (PA).

3. Programmatic Agreement

On April 6, 2016, FRA notified ACHP of the adverse effect finding and invited the agency to participate in the consultation process and preparation of a Section 106 Project PA (36 CFR Part 800.6(a)(1)(i)(C)). FRA provided the required documentation specified in 36 CFR Part 800.11(e) to ACHP through the ACHP Electronic Section 106 Documentation Submittal System. In a letter dated June 7, 2016 and found in **Appendix B**, ACHP indicated it has chosen not to participate in the consultation (36 CFR Part 800.6(a)(1)(iii)). The PA is currently in progress, with a draft included in **Appendix H** in this FEIS. The PA documents the terms and conditions agreed upon by the signatories that include: FRA, Amtrak, and SHPO, to resolve the potential adverse effects on historic properties and conclude the Section 106 process (36 CFR Part 800.16(t)). In addition to the stipulations for archaeological identification and effects studies, some of the other major draft PA stipulations include a preservation fund, design reviews, cultural resources construction protection plans, documentation, interpretive material, and electronic informational sites.

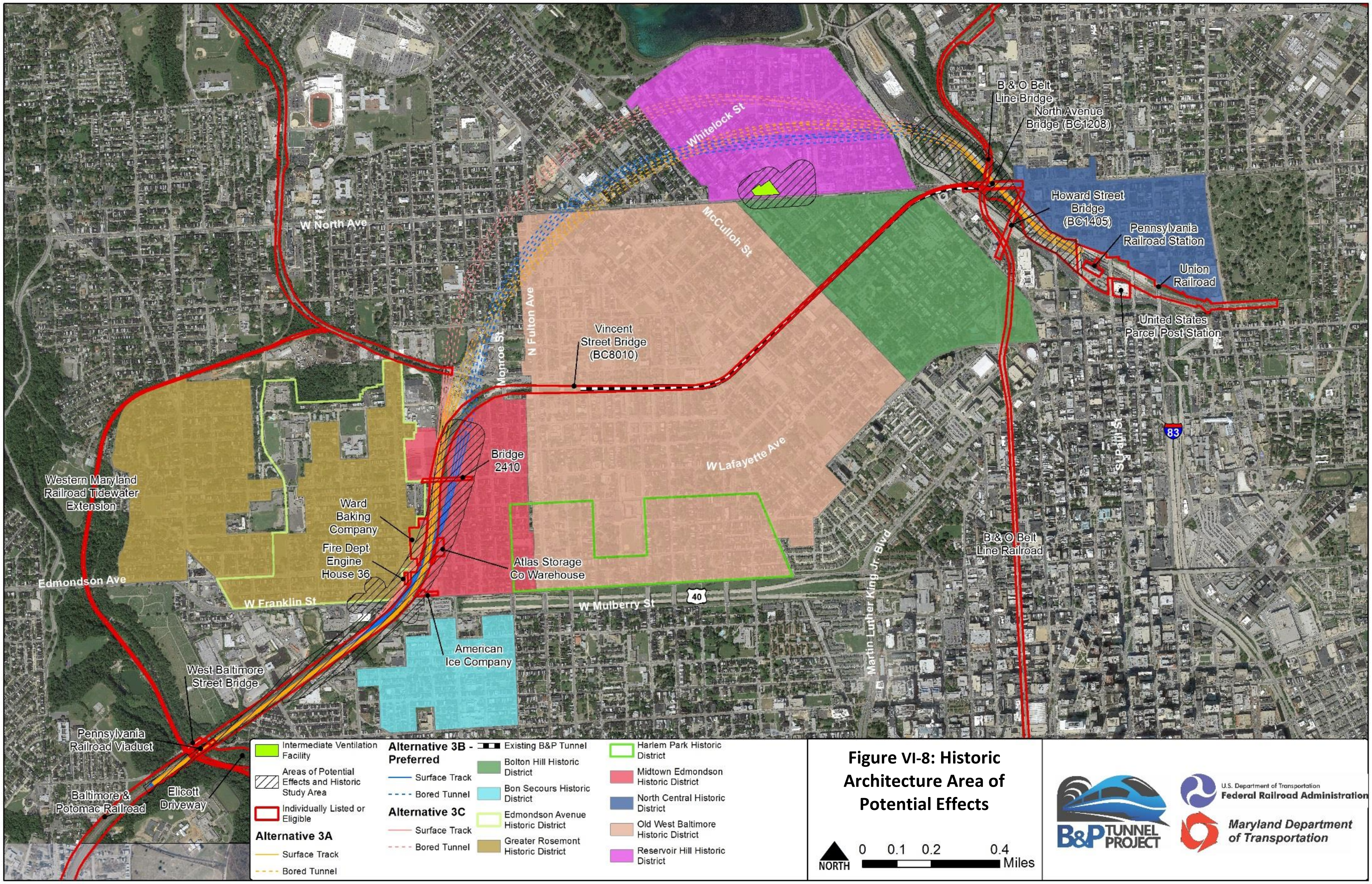

B & O Belt Line Bridge
North Avenue Bridge (BC1208)
Whitelock St
W North Ave
McCulloh St
Howard Street Bridge (BC1405)
Pennsylvania Railroad Station
Union Railroad
United States Parcel Post Station
N Fulton Ave
Monroe St
Vincent Street Bridge (BC8010)
Bridge 2410
W Lafayette Ave
St Paul St
83
Western Maryland Railroad Tidewater Extension
Ward Baking Company
Fire Dept Engine House 36
Atlas Storage Co Warehouse
Edmondson Ave
W Franklin St
W Mulberry St
40
Martin Luther King Jr. Blvd
B & O Belt Line Railroad
American Ice Company
West Baltimore Street Bridge
Pennsylvania Railroad Viaduct
Baltimore & Potomac Railroad
Elicott Driveway
Intermediate Ventilation Facility
Areas of Potential Effects and Historic Study Area
Individually Listed or Eligible
Alternative 3A
Surface Track
Bored Tunnel
Alternative 3B - Preferred
Surface Track
Bored Tunnel
Alternative 3C
Surface Track
Bored Tunnel
Existing B&P Tunnel
Bolton Hill Historic District
Bon Secours Historic District
Edmondson Avenue Historic District
Greater Rosemont Historic District
Harlem Park Historic District
Midtown Edmondson Historic District
North Central Historic District
Old West Baltimore Historic District
Reservoir Hill Historic District
NORTH
0 0.1 0.2 0.4
Miles
U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation

Figure VI-8: Historic Architecture Area of Potential Effects

Table VI-12: Section 106 Effects of the Preferred Alternative on Historic Properties within the Historic Architectural APE

#	NAME OF HISTORIC PROPERTY	MIHP#	PREFERRED ALTERNATIVE	ALTERNATIVE 3A	ALTERNATIVE 3C
1	Baltimore and Ohio Railroad Baltimore Belt Line	B-5287	**Adverse Effect** (1 contributing element in direct APE) Limestone pier of the bridge over Jones Falls Valley demolished and/or relocated	**Adverse Effect** (1 contributing element in direct APE) Limestone pier of the bridge over Jones Falls Valley demolished and/or relocated	**Adverse Effect** (1 contributing element in direct APE) Limestone pier of the bridge over Jones Falls Valley demolished and/or relocated
2	Baltimore and Ohio Railroad Baltimore Belt Line Bridge over Jones Falls Valley	B-5288	**Adverse Effect** Limestone pier demolished and/or relocated	**Adverse Effect** Limestone pier demolished and/or relocated	**Adverse Effect** Limestone pier demolished and/or relocated
3	Baltimore & Potomac Railroad (Philadelphia, Baltimore and Washington Railroad)	B-5164	**Adverse Effect** (7 contributing elements in direct APE) Effects to railroad catenary lines, railroad track bed, Edmondson Avenue Station, W. Mulberry St. Bridge, W. Franklin St. Bridge, Franklintown Road Bridge, and N. Warwick Avenue Bridge	**Adverse Effect** (2 contributing elements in direct APE) Effects to railroad catenary lines and railroad track bed	**Adverse Effect** (7 contributing elements in direct APE) Effects to railroad catenary lines, railroad track bed, Edmondson Avenue Station, W. Mulberry St. Bridge, W. Franklin St. Bridge, Franklintown Road Bridge, and N. Warwick Avenue Bridge
4	Union Railroad	B-5163	No Adverse Effect	No Adverse Effect	No Adverse Effect
5	Howard Street Bridge (BC 1405)	B-4529	No Adverse Effect	No Adverse Effect	No Adverse Effect
6	North Avenue Bridge (BC 1208)	B-4521	No Adverse Effect	No Adverse Effect	No Adverse Effect
7	Reservoir Hill Historic District	B-1379	**Adverse Effect** 1 contributing building demolished, and changes to the streetscape and surrounding area, with the potential to diminish integrity	**Adverse Effect** 1 contributing building demolished, and changes to the streetscape and surrounding area, with the potential to diminish integrity	**Adverse Effect** 1 contributing building demolished, and changes to the streetscape and surrounding area, with the potential to diminish integrity
8	Carver Vocational-Technical High School	B-5294	No Adverse Effect	N/A	No Adverse Effect
9	Western Maryland Railroad, Owings Mills Division	B-5293	No Adverse Effect	N/A	No Adverse Effect
10	Bolton Hill Historic District	B-64	No Adverse Effect	No Adverse Effect	No Adverse Effect
11	Midtown Edmondson Historic District	(None)	**Adverse Effect** (29 contributing elements in direct APE)	**Adverse Effect** (2 contributing elements in direct APE)	**Adverse Effect** (7 contributing elements in direct APE)

#	NAME OF HISTORIC PROPERTY	MIHP#	PREFERRED ALTERNATIVE	ALTERNATIVE 3A	ALTERNATIVE 3C
			27 buildings demolished, 2 bridges altered	1 building demolished, 1 bridge altered	5 buildings demolished, 2 bridges altered
12	Bridge BC 2410 (Lafayette Avenue over Amtrak)	B-4553	**Adverse Effect** Bridge superstructure elevated and substructure potentially modified	**Adverse Effect** Bridge superstructure elevated and substructure potentially modified	**Adverse Effect** Bridge superstructure elevated and substructure potentially modified
13	Atlas Safe Deposit and Storage Company Warehouse Complex	B-5188-2	**Adverse Effect** (1 contributing element in direct APE) Rear warehouse building demolished	No Effect	No Effect
14	American Ice Company	B-1040	No Adverse Effect	N/A	No Effect
15	Greater Rosemont Historic District	B-5112	**Adverse Effect** (5 contributing elements in direct APE) 5 buildings demolished, including the B&P Railroad Edmondson Avenue Station and 2 rowhouses	No Effect	**Adverse Effect** (17 contributing elements in direct APE) 5 commercial, industrial, or institutional properties and 12 rowhouses or rowhouse/commercial buildings
16	Edmondson Avenue Historic District	B-5187	**Adverse Effect** (2 contributing elements in direct APE) 2 rowhouses demolished	No Effect	**Adverse Effect** (12 contributing elements in direct APE) 12 rowhouses or rowhouse/commercial buildings demolished
17	Ward Baking Company	B-5112-2	No Adverse Effect	No Effect	**Adverse Effect** (2 contributing elements in direct APE) Both contributing buildings demolished (main building and garage)
18	Fire Department Engine House No. 36	B-5112-4	No Adverse Effect	N/A	**Adverse Effect** The fire house would be demolished
19	Pennsylvania Railroad Viaduct	B-5064	No Adverse Effect	No Adverse Effect	No Adverse Effect
TOTAL HISTORIC PROPERTIES WITH ADVERSE EFFECT			**9**	**6**	**10**

4. Mitigation

The Project alternatives have been refined, in consultation with the Project Consulting Parties and MHT, in order to minimize impacts to cultural resources. In addition, the Project team is proposing mitigation measures that correspond with the Project's impacts to cultural resources. Although the following mitigation measures correspond with the Preferred Alternative, similar mitigation measures would be appropriate to mitigate cultural resource impacts of Alternative 3A and Alternative 3C. Proposed measures to be implemented as part of the Project in order to mitigate the effects of the Preferred Alternative are identified in the draft Programmatic Agreement, as shown in **Appendix H**. This section provides a brief overview of these proposed measures, which are described in detail in the draft Programmatic Agreement. More detail on each measure is included in the draft PA.

- Subject to specified conditions, the Preferred Alternative proposes establishment of an architectural historic properties preservation fund to address adverse effects to historic properties.
- The Preferred Alternative proposes development of context-sensitive design treatments for new construction informed by the features of the affected historic properties.
- The Preferred Alternative proposes that relevant historic properties, including contributing elements of historic districts, be screened with appropriate sound barriers and/or vegetation when appropriate.
- The Preferred Alternative proposes development of cultural resources construction protection plans designed to protect above-and below-ground known and unknown historic properties from adverse effects during construction activities. Plans will address vibration monitoring, stockpiling, and truck routes/hauling.
- The Preferred Alternative proposes preparation of written and photographic documentation consistent with Level II Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER) standards for deposit within the MHT, for the historic properties, including contributing elements of historic districts, directly adversely affected.
- The Preferred Alternative proposes preparation of interpretive material including signs and/or displays and brochure to be located in Baltimore's Pennsylvania Station. Possible themes may include the history of the B&P Tunnel, the history of the Pennsylvania Railroad and Pennsylvania Station, the influence of railroads on Baltimore City, and/or archaeological findings in the project area as relevant.
- The Preferred Alternative proposes that oral history interviews will be conducted as part of the Preferred Alternative, particularly with older, long-time residents of neighborhoods like Midtown Edmonson and Reservoir Hill, and pre-Amtrak railroad employees, made as audio and/or video recordings in addition to written transcripts.
- The Preferred Alternative proposes securing, stockpiling, and making available salvaged building materials from the demolition of historic properties and contributing elements to historic districts.
- The Preferred Alternative proposes establishment, partnering with, and/or linking to electronic informational sites in order to make available to the public information, products and updates from the Section 106 process and relevant stipulations of the PA. Partner, if warranted with established preservation/history organizations with existing electronic outreach programs.
- The Preferred Alternative proposes completion of a Phase I Archaeological Survey sufficient to identify archaeological resources that may be affected by the Project. A Phase II archaeological survey shall be conducted to evaluate the identified resources for NRHP eligibility. If an adverse effect cannot be alternatively mitigated, The Project shall develop a Phase III research design/treatment plan for each NRHP –eligible archaeological resource adversely effected by the Undertaking.
- The Preferred Alternative proposes investigation of the history, development, use, and evolution of the station facilities and yards comprising present-day Pennsylvania Station in Baltimore City for the purposes of clarifying and delineating the official boundaries of railroad-related NRHP-listed and eligible historic properties.

D. Final Section 4(f) Evaluation

In accordance with 49 USC § 303, FRA may not approve the use of publicly owned land of a public park, recreation area, or land of an historic site of national, State, or local significance unless:

(1) There is no prudent and feasible alternative to using that land; and

(2) The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

A "use" of Section 4(f) property occurs:

- When land is permanently incorporated into a transportation facility;
- When there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose; or
- When there is a constructive use of a Section 4(f) property.

In some cases, even if there is a use of a resource protected by Section 4(f), FRA may determine that a use is *de minimis.* A *de minimis* determination allows the project to continue despite the use. FRA may make a *de minimis* determination on a historic site only if, pursuant to the Section 106 consultation process:

- The transportation program or project will have no adverse effect on the historic site, or there will be no historic properties affected by the transportation program or project;
- FRA's finding has received written concurrence from the applicable State historic preservation officer; and
- FRA has developed its finding in consultation with parties consulting as part of the Section 106 consultation process.

With respect to parks, recreation areas, or wildlife or waterfowl refuges, FRA may make a finding of *de minimis* impact only if:

- After public notice and opportunity for public review and comment, FRA finds that the transportation program or project will not adversely affect the activities, features, and attributes of the park, recreation area, or wildlife or waterfowl refuge eligible for protection under this section; and
- The finding has received concurrence from the officials with jurisdiction over the park, recreation area, or wildlife or waterfowl refuge.

If FRA determines that there is no feasible and prudent avoidance alternative, FRA may approve from among the alternatives that use Section 4(f) properties only the alternative that causes the least overall harm in light of the statute's preservation purpose.

FRA has prepared this Final Section 4(f) Evaluation (Evaluation) to assess the use of Section 4(f) properties by the B&P Tunnel Project alternatives, and to evaluate feasible and prudent alternatives that avoid the use of Section 4(f) properties. Based on this Evaluation, there are no feasible and prudent alternatives that would avoid use of all Section 4(f) properties therefore this Evaluation includes a determination of which of the alternatives will result in the least overall harm in light of the statute's preservation purposes This Evaluation also identifies appropriate measures to minimize harm. This Evaluation reflects comments FRA received on the Draft Section 4(f) Evaluation, and FRA has incorporated all possible planning to minimize harm to Section 4(f) properties into the Preferred Alternative. The evaluation includes consideration of one Section 4(f) property identified subsequent to the Draft Section 4(f) Evaluation, the Union Railroad, which is described in **Section V.C**.

This Final Section 4(f) Evaluation also provides FRA's *de minimis* impact findings for some Section 4(f) properties. Potential *de minimis* impacts were presented for public review and comment with the DEIS, in conjunction with the requirements of the National Environmental Policy Act (NEPA).

1. Use of Section 4(f) Properties

This section discusses the use of Section 4(f) properties that would be caused by the B&P Tunnel Project Alternatives 3A, 3B, and 3C. Where it determined the impacts would be *de minimis*, FRA coordinated with the officials with jurisdiction over the relevant Section 4(f) properties. For historic properties, FRA has received written concurrence from the State Historic Preservation Officer (SHPO, or MHT) that there would be no adverse effect or no effect to the property in accordance with 36 CFR Part 800. MHT concurred with FRA's October, 2016 determination of no adverse effects to certain Section 4(f) properties. In this correspondence, FRA notified MHT of its intent to make a determination of *de minimis* impacts resulting from the Preferred Alternative (**Appendix B**). Therefore, this Evaluation includes FRA's final *de minimis* impact determination for the Fire Department Engine Company No. 36, Ward Baking Company, and Union Railroad historic properties. **Table VI-13** provides an overview of Section 4(f) impacts resulting from the Alternatives. None of the build alternatives would result in a Section 4(f) use of Lafayette and Payson Park or Mary Ann Winterling Elementary School.

A Section 4(f) use can occur when a transportation project does not incorporate land from a Section 4(f) resource into the project, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features or attributes of the resource are substantially diminished.

For example, a substantial impairment occurs when the projected noise level increase attributable to a project substantially interferes with the use and enjoyment of a noise-sensitive facility of a property protected by Section 4(f). Examples of noise-sensitive facilities protected by Section 4(f) include outdoor amphitheaters, sleeping areas of a campground, historic sites where a quiet setting is a feature or attribute of the site's significance, urban parks where serenity and quiet are significant attributes, or an area of a wildlife and waterfowl refuge intended for wildlife viewing. Although some park and historic properties would incur a noise impact from the build alternatives, such as residences in the Midtown-Edmondson Historic District, the protected activities, features, and attributes of these Section 4(f) Properties are not considered noise sensitive. Section 4(f) properties in the vicinity of the Project are situated in developed urban areas (characterized by residential, commercial, and industrial developments) and/or are in or near transportation infrastructure such as roadways and railroads. Section 4(f) properties near the existing NEC railroad alignment currently function while experiencing noise from the railroad. Therefore, noise impacts from the Project would not substantially impair the activities, features, or attributes that qualify any park or historic properties for Section 4(f) protection.

Additionally, a substantial impairment occurs when the proximity of a proposed project diminishes the aesthetic features or attributes of a property protected by Section 4(f) The build alternatives would result in visual and aesthetic changes in the surrounding environment, which includes Section 4(f) properties. However, the proximity of the Project would not impair aesthetic features or attributes of any properties protected by Section 4(f). Presently, the Section 4(f) properties in the vicinity of the project are situated in developed urban areas (characterized by residential, commercial, and industrial developments) and/or are in or near transportation infrastructure such as roadways and railroads. Therefore, implementation of the build alternatives would not substantially detract from the views or setting of any Section 4(f) properties.

Substantial impairment also occurs when a project results in 1) restriction of access which substantially diminishes the utility of Section 4(f) resources; 2) vibration impacts that substantially impair the use of Section 4(f) resources; and 3) intrusion that substantially interferes with a wildlife and waterfowl refuge. The build alternatives would not result in these types of impacts on Section 4(f) resources.

The LOD used to determine impacts for each build alternative includes areas of temporary occupancy; however, FRA has assumed for the purposes of this Evaluation that even temporary occupancy of Section 4(f) property within the LOD would result in its permanent incorporation into the Project.

Table VI-13: Overview of Section 4(f) Impacts

Alternative	**Alternative 3A**	**Alternative 3B - Preferred**	**Alternative 3C**
Section 4(f) Properties	6 (use) (+3 No Use) (+1 De Minimis)	9 (use) (+1 No Use) (+3 De Minimis)	10 (use) (+1 No Use) (+2 De Minimis)
Use	• B&O Belt Line Railroad • B&O Belt Line Bridge • B&P Railroad • Bridge 2410/Lafayette Avenue • Midtown-Edmonson Historic District (1 demolition, 1 other) • Reservoir Hill Historic District (1 demolition)	• B&O Belt Line Railroad • B&O Belt Line Bridge • B&P Railroad • Bridge 2410/Lafayette Avenue • Midtown-Edmonson Historic District (27 demolitions, 8 other) • Greater Rosemont Historic District (5 demolitions, 15 other) • Edmonson Avenue Historic District (2 demolitions, 13 other) • Atlas Storage Co • Reservoir Hill Historic District (1 demolition)	• B&O Belt Line Railroad • B&O Belt Line Bridge • B&P Railroad • Bridge 2410/Lafayette Avenue • Midtown-Edmonson Historic District (5 demolitions, 2 other) • Greater Rosemont Historic District (17 demolitions, 35 other) • Edmonson Avenue Historic District (12 demolitions, 35 other) • Fire Company 36 • Ward Baking Co • Reservoir Hill Historic District (1 demolition)
De Minimis	• Union Railroad	• Fire Company 36 • Ward Baking Co • Union Railroad	• Western Maryland Railroad • Union Railroad
Total Contributing*	3 Total 2 Demolitions	54 Total 31 Demolitions	58 Total 19 Demolitions

*Number of historic resources contributing to historic districts. Note that some buildings contribute to multiple historic districts. Does not include B&P Railroad contributing elements.

a. Alternative 1: No-Build

No use of Section 4(f) properties would occur under this alternative. No new transportation facilities would be constructed, and no parks or historic resources would require Section 4(f) use.

b. Alternative 3A

Alternative 3A would result in use of six Section 4(f) properties including the B&O Belt Line Railroad, the B&O Belt Line Bridge over Jones Falls Valley, Midtown Edmondson Historic District, Bridge 2410 / Lafayette Avenue over Amtrak, the Baltimore and Potomac Railroad, and the Reservoir Hill Historic District. Alternative 3A would have a *de minimis* impact on the Union Railroad. The alternative would require the acquisition of land within the Edmonson Avenue Historic District and the Greater Rosemont Historic District, but would not use contributing elements in the districts; therefore, the impact would not constitute a Section 4(f) "use."

Section 4(f) Properties Requiring Use

Removal of major substructural pier elements of the B&O Belt Line Bridge over Jones Falls Valley would be required to construct Alternative 3A (**Figure VI-9**). This would alter historic characteristics in a manner that would diminish historic integrity, resulting in an adverse effect per 36 CFR Part 800.5 to the individually eligible Belt Line Bridge and to the B&O Belt Line Railroad district and result in a Section 4(f) use.

Alternative 3A would result in modifications to elements of the historic Baltimore and Potomac Railroad alignment, such as trackwork and catenary. The existing B&P Tunnel, a contributing element of the historic district, would be abandoned in a manner that would allow for future transportation use. The modifications to the historic site would alter historic characteristics of the rail line in a manner that would diminish the site's historic integrity and would result in an adverse effect per 36 CFR Part 800.5 and a Section 4(f) use.

Construction of the south portal approach for Alternative 3A would require the demolition of one historic building and modification of one bridge, both of which contribute to the Midtown Edmondson historic district (**Figure VI-10**). The demolition and bridge modification would alter historic characteristics in a manner that would diminish historic integrity resulting in an adverse effect per 36 CFR Part 800.5 and result in permanent incorporation resulting in a Section 4(f) use.

The Alternative 3A modifications to Bridge 2410 / Lafayette Avenue over Amtrak could include raising the bridge superstructure and potentially modifying the substructure to allow for four tracks. This would alter historic characteristics in a manner that would diminish historic integrity resulting in adverse effect per 36 CFR Part 800.5. and result in a Section 4(f) use.

Alternative 3A would require construction of an Intermediate Ventilation Facility located in the Reservoir Hill Historic District (**Figure VI-11**). The Intermediate Ventilation Facility is proposed for a site at 900-940 West North Avenue. The site would require demolition and permanent incorporation of one contributing historic element, a historic commercial building. Use of the contributing historic element at the 900-940 West North Avenue site would alter historic characteristics in a manner that would diminish historic integrity, and thus would result in adverse effect per 36 CFR Part 800.5. The Project Consulting Parties noted the low level of importance of the commercial building at 900-940 West North Avenue in relation to the Reservoir Hill Historic District.

***De Minimis* Impacts**

Alternative 3A would result in modifications to elements of the historic Union Railroad alignment, such as trackwork and catenary. The modifications to the historic site would not diminish historic integrity, resulting in no adverse effect per 36 CFR Part 800.5. Thus FRA has determined the impacts from Alternative 3A to the Union Railroad are *de minimis*.

a. Preferred Alternative

FRA has refined Alternative 3B since the publication of the Draft Section 4(f) Evaluation and DEIS. A description of the refinements and comparison of impacts between the DEIS Alternative 3B and current Preferred Alternative is included in **Chapter III**. The refinements have resulted in changes to the use of Section 4(f) properties as described below.

The Preferred Alternative would result in potential use of nine Section 4(f) properties including the Baltimore and Ohio Belt Line Railroad, Baltimore and Ohio Belt Line Bridge over Jones Falls Valley, Baltimore and Potomac Railroad, Midtown Edmondson Historic District, Bridge 2410 / Lafayette Avenue over Amtrak, Greater Rosemont Historic District, Atlas Safe Deposit and Storage Company Warehouse, the Edmonson Avenue Historic District, and the Reservoir Hill Historic District. The Preferred Alternative would have *de minimis* impacts on three Section 4(f) properties including Fire Department Engine Company No. 36, the Ward Baking Company, and the Union Railroad.

Section 4(f) Properties Requiring Use

The Section 4(f) use of the B&O Belt Line Bridge over Jones Falls Valley, the B&O Belt Line Railroad, and Bridge 2410/Lafayette Avenue over Amtrak resulting from the Preferred Alternative would be identical to the use under Alternative 3A as described above and shown in **Figure VI-12**.

Construction of the Preferred Alternative would require permanent incorporation of modifications to elements of the historic Baltimore and Potomac Railroad such as the trackwork, bridges, catenary, and right-of-way that would constitute a Section 4(f) use. These modifications would result in the permanent incorporation of land and would bisect the existing alignment and shift the alignment east. The harm to the historic site would alter historic characteristics of the rail line in a manner that diminishes historic integrity and results in an adverse effect per 36 CFR Part 800.5.

Construction of the south portal approach for the Preferred Alternative would require demolition of 27 historic buildings or other contributing elements to the Midtown Edmondson Historic District (**Figure VI-13**) and modification of two contributing bridge structures. Alternative 3B would result in permanent incorporation of portions of an additional six contributing properties that would not require demolition under the Preferred Alternative. The permanent incorporation of land would constitute a Section 4(f) use. The demolitions and modifications would alter historic characteristics of the historic buildings and contributing properties in a manner that would diminish their historic integrity, resulting in adverse effect per 36 CFR Part 800.5.

Construction of the south portal approach for the Preferred Alternative would require demolition of five historic buildings contributing to the Greater Rosemont Historic District. Portions of an additional 15 properties contributing to the Greater Rosemont Historic District would be permanently incorporated without building demolition. The demolition and permanent incorporation of historic resources would constitute a Section 4(f) use, and would alter historic characteristics in a manner that would diminish historic integrity resulting in adverse effect per 36 CFR Part 800.5.

The Preferred Alternative would require demolition of one of the three existing buildings in the Atlas Safe Deposit and Storage Company Warehouse complex in order to construct the south portal approach. Neither the building facing Lafayette Avenue or the ancillary garage would be directly impacted by the Preferred Alternative, and the rear building would be demolished. This permanent incorporation of the historic resource would result in a Section 4(f) use. Harm to the historic site would alter historic characteristics in a manner that would diminish historic integrity resulting in an adverse effect per 36 CFR Part 800.5.

The Preferred Alternative would require demolition and permanent incorporation of two buildings contributing to the Edmonson Avenue Historic District in order to construct the south portal approaches and maintain connectivity along existing streets. An additional 13 contributing elements in the Edmonson Avenue Historic District would be partially incorporated but would not be demolished. The demolition and permanent incorporation of historic properties would result in a Section 4(f) use. The harm to the historic site would alter historic characteristics in a manner that would diminish historic integrity, and thus would result in adverse effect per 36 CFR Part 800.5.

The Preferred Alternative would require construction of an Intermediate Ventilation Facility located in the Reservoir Hill Historic District (**Figure VI-11)** resulting in Section 4(f) use of the Historic District identical to that described under Alternative 3A above. The Project Consulting Parties noted the low level of importance of the commercial buildings at 900-940 West North Avenue in relation to the Reservoir Hill Historic District.

***De Minimis* Impacts**

The Preferred Alternative would require the incorporation of a portion of the parking lot at the Fire Department Engine Company No. 36 property which is located at the rear of the building. However, this would not diminish historic integrity of the historic site and would not result in an adverse effect per 36 CFR Part 800.5. Therefore, FRA has determined that the impact is *de minimis* pursuant to Section 4(f).

The Preferred Alternative would require the incorporation of a small portion of the Ward Baking Company property—however, the Ward Baking Company building would remain intact. This would not diminish historic integrity of the historic site and would not result in an adverse effect per 36 CFR Part 800.5. Therefore, FRA has determined that the impact is *de minimis* pursuant to Section 4(f).

The Preferred Alternative would result in modifications to elements of the historic Union Railroad alignment identical to those described under Alternative 3A above, resulting in a *de minimis* impact.

b. Alternative 3C

Alternative 3C would result in potential use of 10 Section 4(f) properties including the Baltimore and Ohio Belt Line Railroad, the Baltimore and Ohio Belt Line Bridge over Jones Falls Valley, the Baltimore and Potomac Railroad, Midtown Edmondson Historic District, Bridge 2410 / Lafayette Avenue over Amtrak, Greater Rosemont Historic District, Edmondson Avenue Historic District, Fire Department Engine Company No. 36, the Ward Baking Company, and the Reservoir Hill Historic District. Alternative 3C would have *de minimis* impacts on two Section 4(f) properties including the Western Maryland Railroad and the Union Railroad.

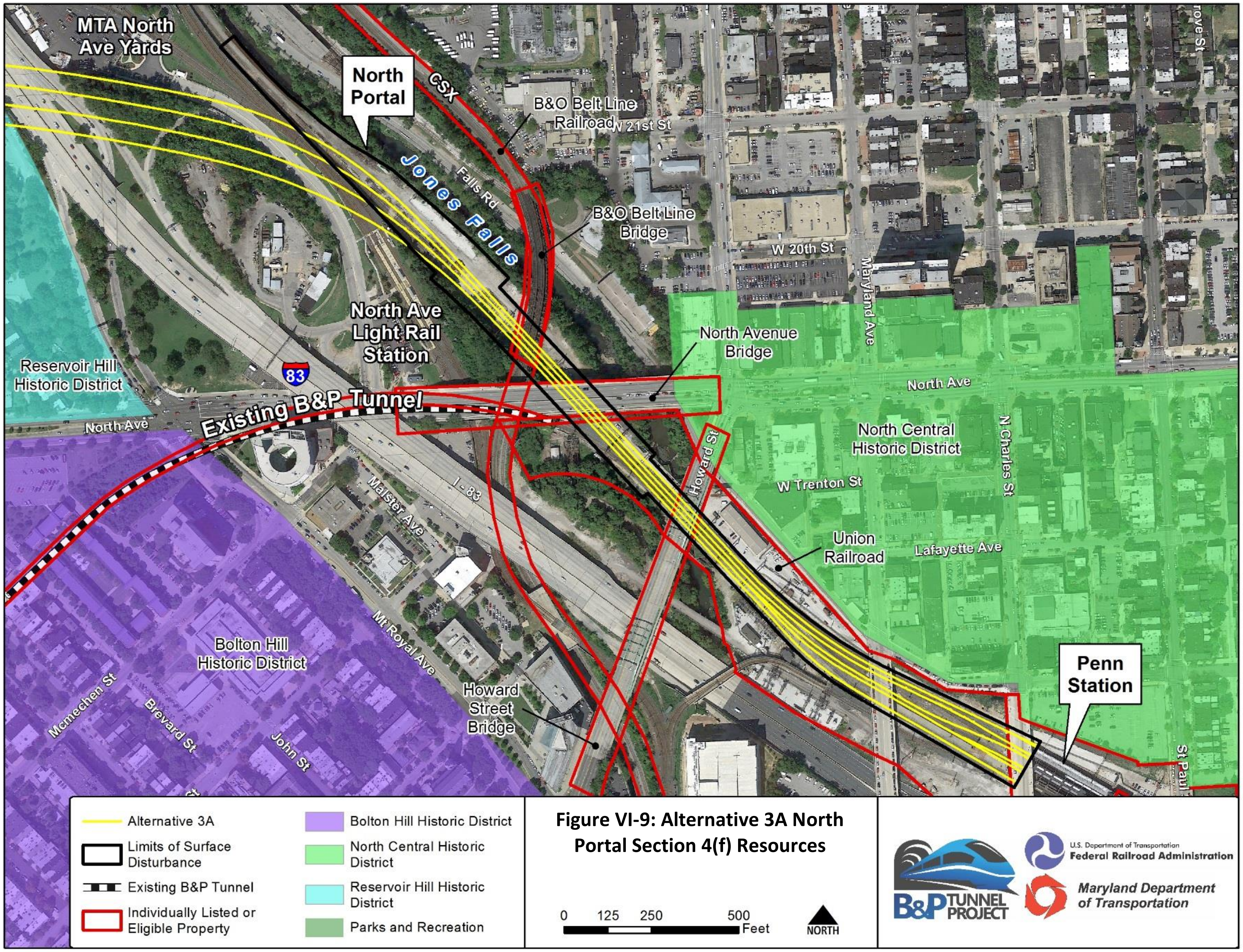
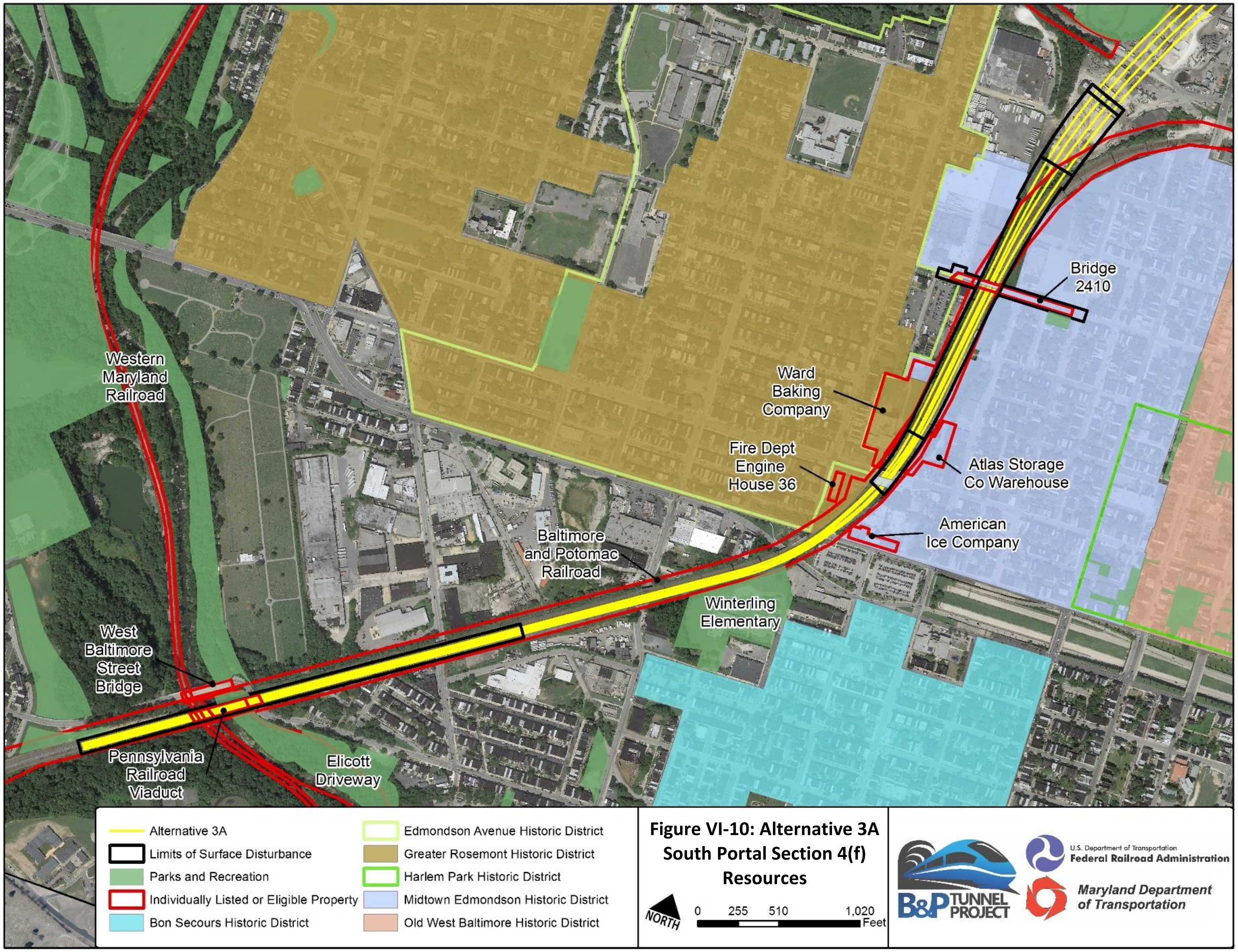


Figure VI-9: Alternative 3A North Portal Section 4(f) Resources


Bridge 2410
Western Maryland Railroad
Ward Baking Company
Fire Dept Engine House 36
Atlas Storage Co Warehouse
American Ice Company
Baltimore and Potomac Railroad
Winterling Elementary
West Baltimore Street Bridge
Pennsylvania Railroad Viaduct
Elicott Driveway
Alternative 3A
Limits of Surface Disturbance
Parks and Recreation
Individually Listed or Eligible Property
Bon Secours Historic District
Edmondson Avenue Historic District
Greater Rosemont Historic District
Harlem Park Historic District
Midtown Edmondson Historic District
Old West Baltimore Historic District
NORTH
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Feet
U.S. Department of Transportation
Federal Railroad Administration
Maryland Department of Transportation

Figure VI-10: Alternative 3A South Portal Section 4(f) Resources

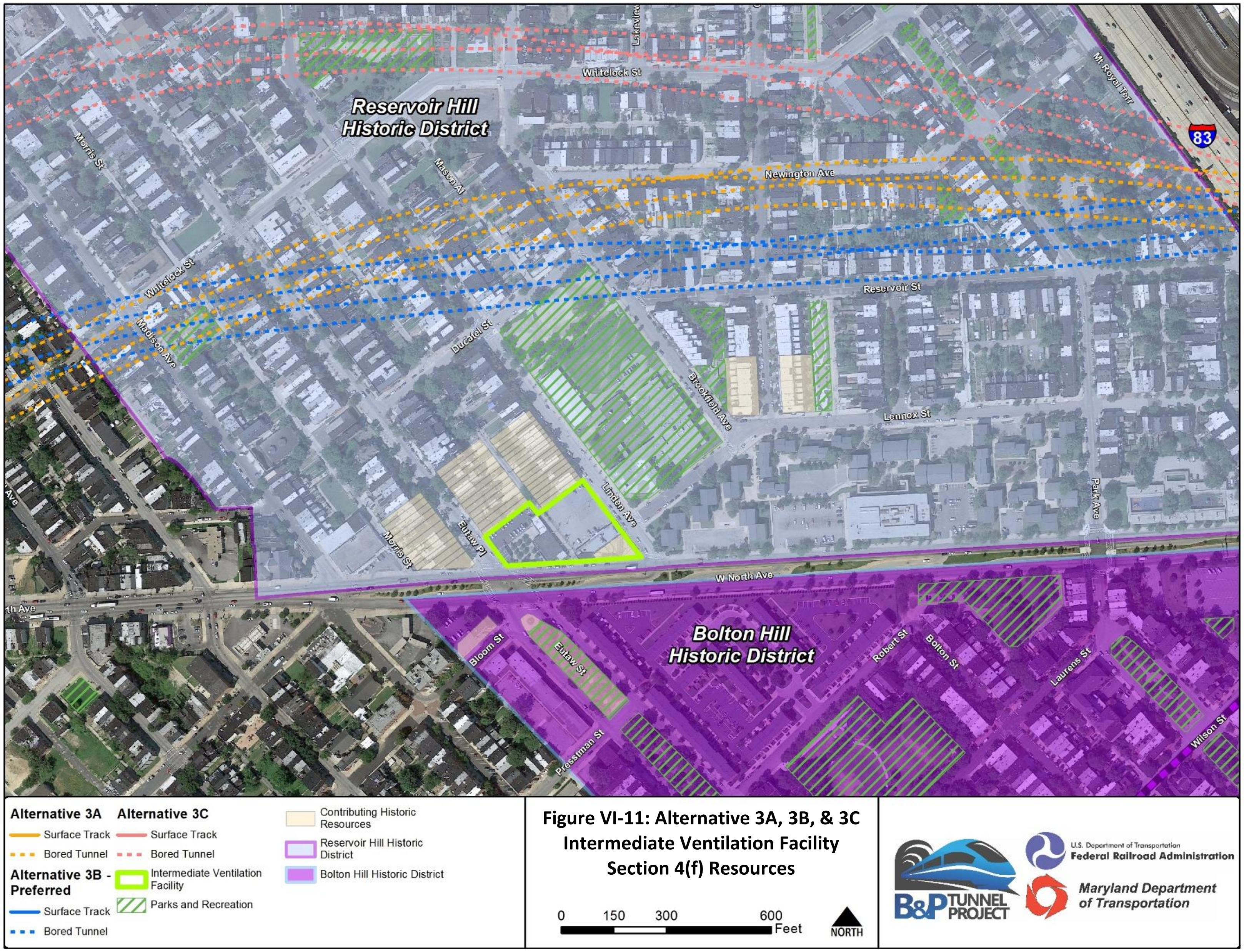


Figure VI-11: Alternative 3A, 3B, & 3C Intermediate Ventilation Facility Section 4(f) Resources

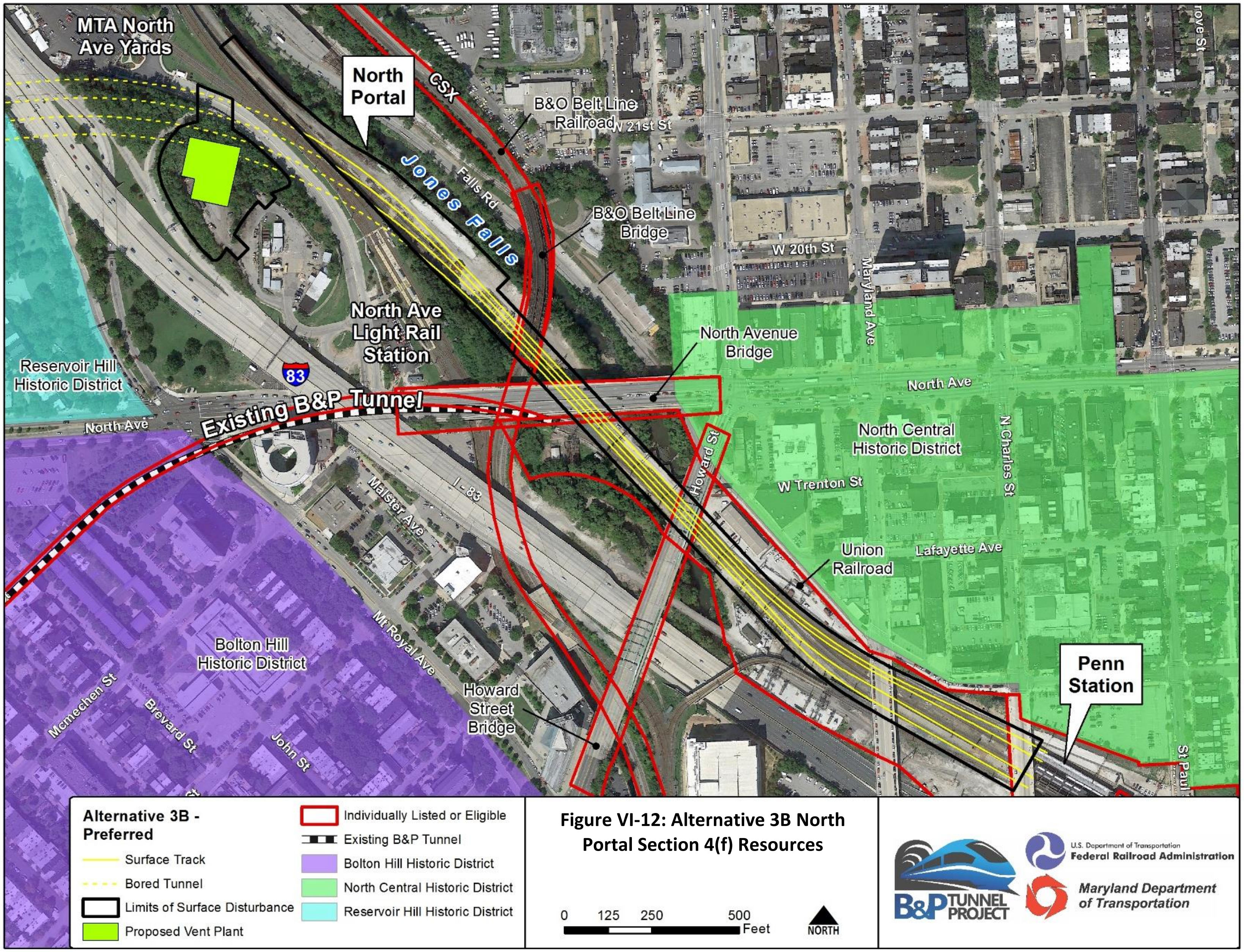
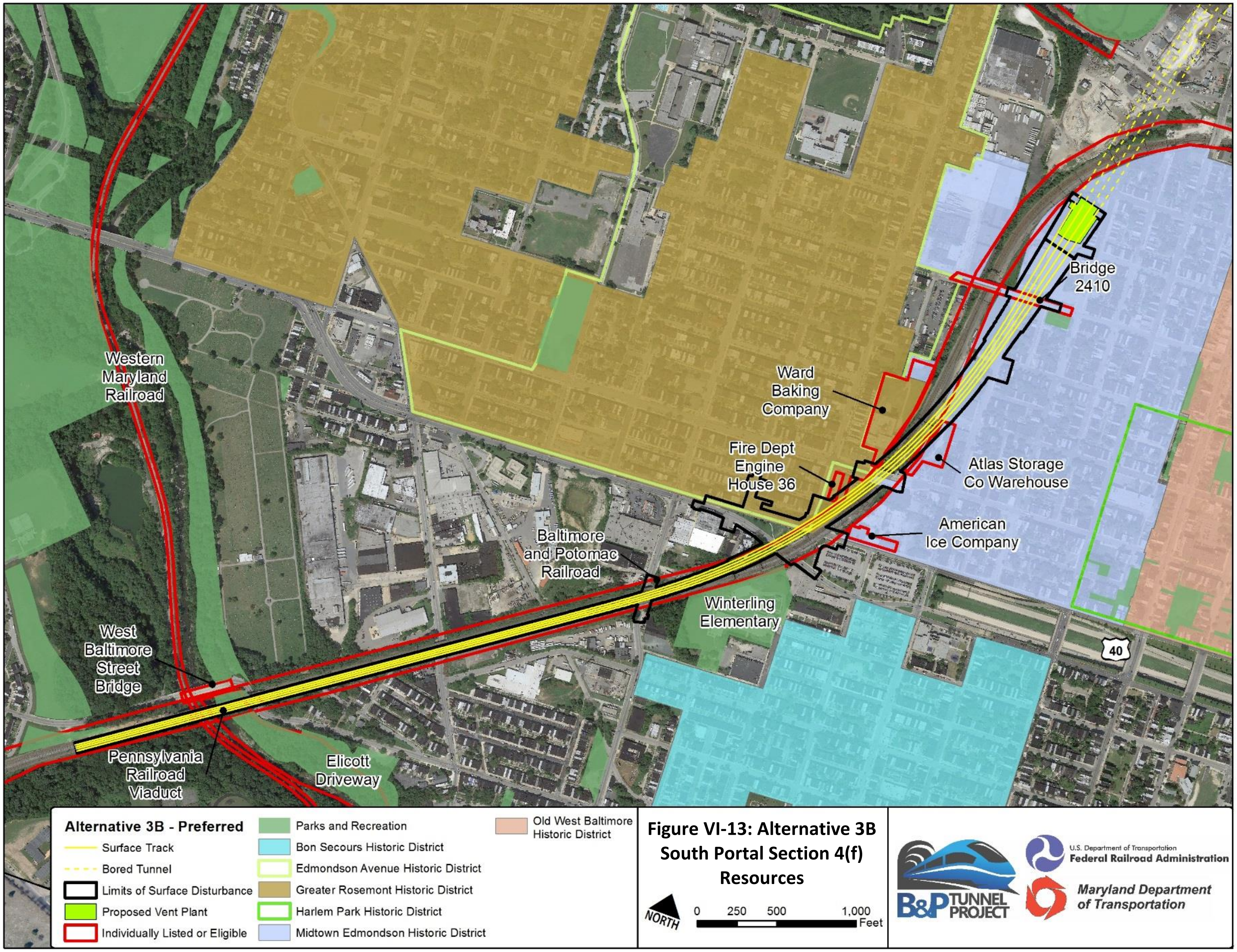


Figure VI-12: Alternative 3B North Portal Section 4(f) Resources


Western Maryland Railroad
Ward Baking Company
Bridge 2410
Fire Dept Engine House 36
Atlas Storage Co Warehouse
American Ice Company
Baltimore and Potomac Railroad
Winterling Elementary
West Baltimore Street Bridge
Pennsylvania Railroad Viaduct
Elicott Driveway
40
Alternative 3B - Preferred
Surface Track
Bored Tunnel
Limits of Surface Disturbance
Proposed Vent Plant
Individually Listed or Eligible
Parks and Recreation
Bon Secours Historic District
Edmondson Avenue Historic District
Greater Rosemont Historic District
Harlem Park Historic District
Midtown Edmondson Historic District
Old West Baltimore Historic District
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B&P TUNNEL PROJECT
U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation

Figure VI-13: Alternative 3B South Portal Section 4(f) Resources

Section 4(f) Properties Requiring Use

The Section 4(f) use of the B&O Belt Line Bridge over Jones Falls Valley, the B&O Belt Line Railroad, and Bridge 2410/Lafayette Avenue over Amtrak resulting from Alternative 3C would be identical to the use under Alternative 3A as described above and shown in **Figures VI-14** and **VI-15**.

Alternative 3C would result in modifications to elements of the historic Baltimore and Potomac Railroad resulting in a Section 4(f) use identical to the Preferred Alternative as described above.

Alternative 3C would result in demolition and permanent incorporation of five historic buildings and modification of two bridges contributing to the Midtown Edmondson Historic District (**Figure VI-15**) resulting in a Section 4(f) use. The harm to the historic site would alter historic characteristics in a manner that would diminish historic integrity, and thus meets the criteria of adverse effect per 36 CFR Part 800.5.

Demolition of 17 historic buildings contributing to the Greater Rosemont Historic District would be required for construction of Alternative 3C. An additional 35 contributing properties would have portions incorporated into transportation use but would not require demolition. The permanent incorporation and demolition of historic properties would result in a Section 4(f) use. The harm to the historic site would alter historic characteristics in a manner that would diminish historic integrity, resulting in adverse effect per 36 CFR Part 800.5.

Under Alternative 3C, use of the Edmondson Avenue Historic District would include demolition of 12 historic buildings or other elements contributing to the district. An additional 35 contributing properties would be partially incorporated into the transportation use and would not be demolished. The demolition and permanent incorporation of historic properties would result in a Section 4(f) use. The harm to the historic district would alter historic characteristics in a manner that would diminish historic integrity, resulting in adverse effect per 36 CFR Part 800.5.

Alternative 3C would require demolition and permanent incorporation of the Fire Department Engine Company No. 36 historic site resulting in Section 4(f) use. The harm to the historic site would alter historic characteristics in a manner that would diminish historic integrity, resulting in adverse effect per 36 CFR Part 800.5.

Alternative 3C would require demolition and permanent incorporation of the Ward Baking Company building in order to construct the south portal approach, resulting in a Section 4(f) use. Harm to the historic site would alter historic characteristics in a manner that would diminish historic integrity and would thus constitute an adverse effect per 36 CFR Part 800.5.

Alternative 3C would require construction of an Intermediate Ventilation Facility located in the Reservoir Hill Historic District, (**Figure VI-11)** resulting in Section 4(f) use of the historic district identical to that described under Alternative 3A above.

De Minimis Impacts

Alternative 3C would impact the historic railroad right-of-way of the Western Maryland Railroad but would not affect the alignment or operation of the railroad. The harm to the railroad would not diminish historic integrity and would result in no adverse effect per 36 CFR Part 800.5. Therefore, FRA has determined the impact would be considered *de* pursuant to Section 4(f).

Alternative 3C would result in modifications to elements of the historic Union Railroad alignment identical to those described above under Alternative 3A, resulting in a *de minimis* impact.

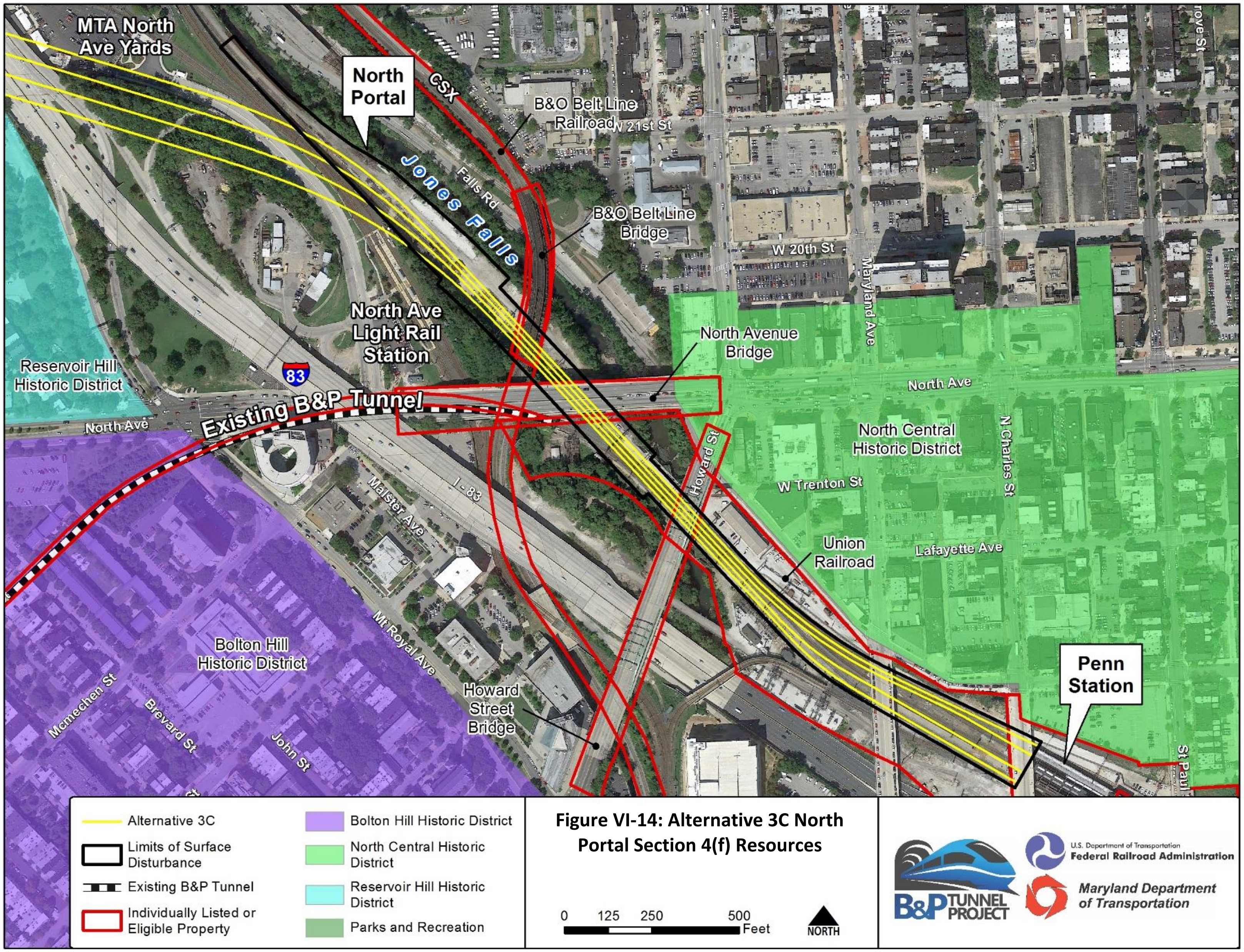
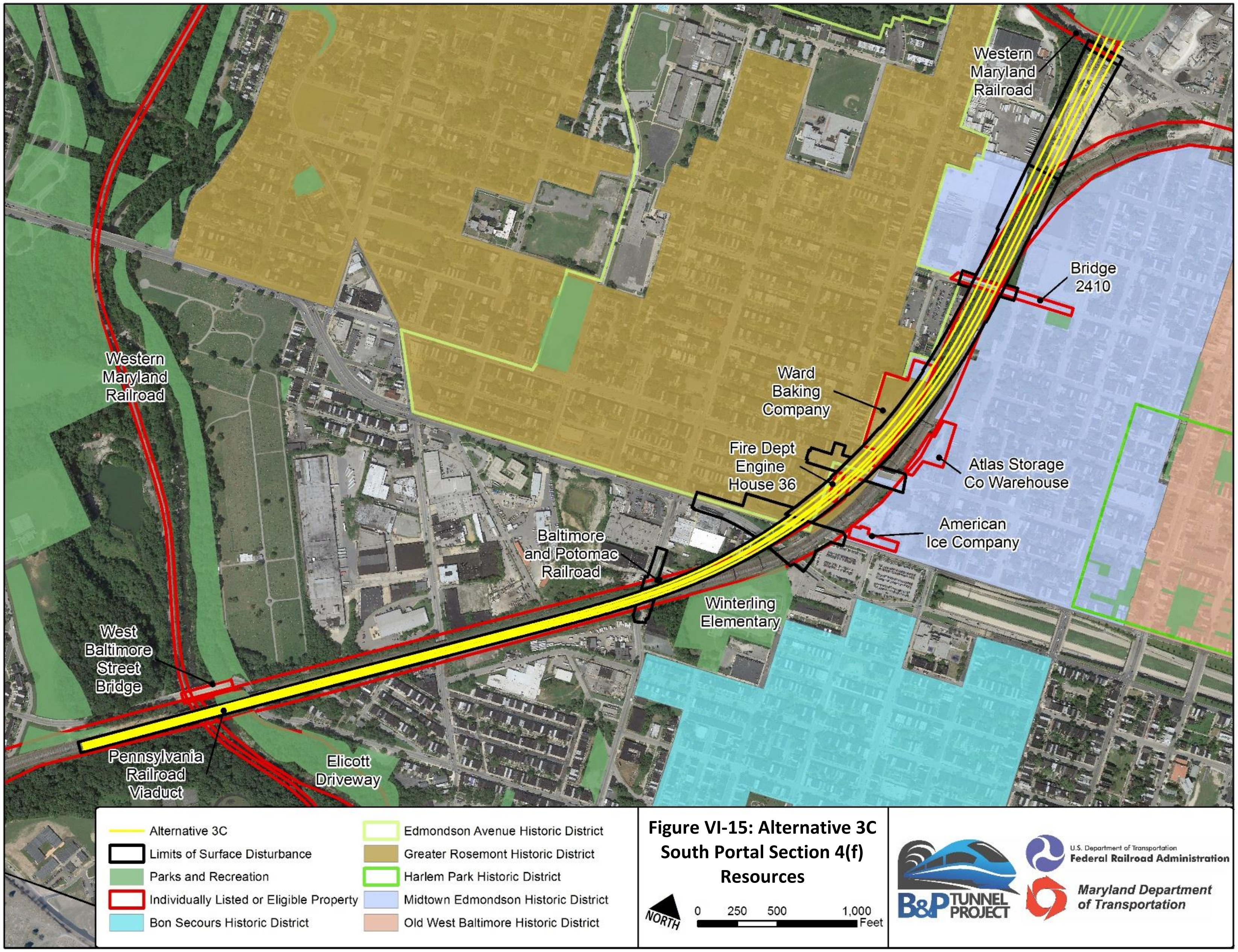


Figure VI-14: Alternative 3C North Portal Section 4(f) Resources


Western Maryland Railroad
Bridge 2410
Ward Baking Company
Fire Dept Engine House 36
Atlas Storage Co Warehouse
American Ice Company
Baltimore and Potomac Railroad
Winterling Elementary
Western Maryland Railroad
West Baltimore Street Bridge
Pennsylvania Railroad Viaduct
Elicott Driveway
Alternative 3C
Limits of Surface Disturbance
Parks and Recreation
Individually Listed or Eligible Property
Bon Secours Historic District
Edmondson Avenue Historic District
Greater Rosemont Historic District
Harlem Park Historic District
Midtown Edmondson Historic District
Old West Baltimore Historic District
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B&P TUNNEL PROJECT
U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation

Figure VI-15: Alternative 3C South Portal Section 4(f) Resources

2. Avoidance Analysis

The purpose of Section 4(f) is to avoid and, when avoidance is not feasible or prudent, minimize the use of Section 4(f) properties. See FHWA's *Section 4(f) Policy Paper* (FHWA, 2012). Through the NEPA process, FRA has analyzed whether there is a feasible and prudent avoidance alternative. An avoidance alternative is an alternative that would not result in the use of Section 4(f) property. This analysis focuses on FRA's identification, development, evaluation, elimination, and documentation of potential feasible and prudent avoidance alternatives.[4]

An alternative is not ***feasible*** if it cannot be built as a matter of sound engineering judgment.

An alternative is not ***prudent*** if:

- It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
- It results in unacceptable safety or operational problems;
- It causes severe social, economic, or environmental impacts even after reasonable mitigation; severe disruption to established communities; severe disproportionate impacts to minority or low income populations; or severe impacts to environmental resources protected under other Federal statutes;
- It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
- It causes other unique problems or unusual factors; or
- It involves multiple factors above that while individually minor, cumulatively cause unique problems, or impacts of extraordinary magnitude.

a. Avoidance Alternatives

All three build alternatives, including the Preferred Alternative, would result in the use of Section 4(f) properties. Eleven of the 16 Preliminary Alternatives previously evaluated and documented in the *Preliminary Alternatives Screening Report* are located in the same vicinity as the Preferred Alternative between the Amtrak Gwynns Falls Bridge and Baltimore Penn Station. FRA has determined that those eleven alternatives could not avoid the numerous parks and historic resources located in the Study Area vicinity, as they would require similar north and south portal impacts as the Preferred Alternative. This determination is based on the approximate location of the alignments, as documented in the *PASR*, relative to the locations of known Section 4(f) properties.

Nearly the entire area surrounding the existing NEC through West Baltimore is designated within one or more NRHP listed or eligible historic districts, which extend continuously from Druid Hill Park in the north to the Route 40 corridor in the south. Additionally, any alternatives that require the use of the portion of Amtrak's NEC currently located on the historic Baltimore and Potomac Railroad between the Baltimore City/County Line and Baltimore Penn Station cannot be avoidance alternatives because they do not avoid the use of Section 4(f) properties.

FRA identified three potential avoidance alternatives: Alternative 1: No Build, Preliminary Alternative 6: Locust Point, and Preliminary Alternative 7: Sports Complex. Alternative 1: No-Build would not construct improvements beyond maintenance through the Study Area and thus would avoid use of any Section 4(f) property. Preliminary Alternatives 6 and 7 would each bypass the historic Baltimore and Potomac Railroad, as well as Baltimore Penn Station, and thus could potentially avoid the numerous Section 4(f) resources clustered around the existing B&P

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[4] FRA has conducted its Section 4(f) analysis consistent with FRA's Procedures for Considering Environmental Impacts (64 FR 28545, May 26, 1999) and using the Federal Highway Administration's (FHWA) regulations as guidance (23 CFR Part 774).

Tunnel. Thus, FRA has discussed these three potential avoidance alternatives in this Section 4(f) avoidance analysis (see **Figure VI-16**).

b. Alternative 1: No-Build

The No-Build Alternative would entail continued operation of the existing B&P Tunnel with no significant improvements aside from the routine maintenance currently being conducted. The tunnel's basic geometry and structure would not be improved and the existing tunnel and tracks would be left in place. This alternative would not modernize the tunnel or bring it into a "state of good repair," but would rather maintain the existing service and ongoing maintenance as currently practiced with minimal disruption. Because no improvements would be completed under this alternative, no use of Section 4(f) property would result.

Alternative 1: No Build would not, however, meet the B&P Tunnel Project's Purpose and Need of addressing the structural and operational deficiencies of the B&P Tunnel, reducing travel times, accommodating projected travel demand for passenger services, eliminating impediments to existing and projected operations along the NEC, or providing operational reliability. Because the No-Build Alternative fails to meet the Project's Purpose and Need, it would compromise the Project to a degree that would render it unreasonable to continue. Therefore, FRA has determined that the No-Build Alternative is not prudent and, thus, is not a viable avoidance alternative.

c. Preliminary Alternative 6: Locust Point

Alternative 6: Locust Point originated in the 2011 *Baltimore's Railroad Network: Analysis and Recommendations* (FRA and MDOT, 2011) report and was further analyzed in the B&P Tunnel *Preliminary Alternatives Screening Report*. The alignment would, from the south, depart from the existing NEC at Halethorpe Interlocking in Baltimore County, just outside of the I-695 Baltimore Beltway, to travel along the CSX main line to Curtis Bay Junction in southwest Baltimore City. At a location east of Curtis Bay Junction, the alignment would diverge to the east from CSX right-of-way. It would continue to the northeast, crossing over local roads and streets, to Westport. Trains would then cross the Middle Branch of the Harbor on an elevated structure above the former Western Maryland moveable bridge. The alignment would enter tunnels to pass below a portion of Locust Point and the Northwest Branch of the Inner Harbor before rising to ground level north of I-95 in Canton. The alternative would then curve to the north and follow existing NS tracks to rejoin the existing NEC at Bay Interlocking.

Alternative 6 would avoid Section 4(f) properties by following existing CSX alignment and bypassing the densely developed and historic central portion of Baltimore and traveling through several largely industrial areas in southern Baltimore City. While the conceptual alternative does not appear to result in the use of Section 4(f) properties, FRA would need to complete further engineering analysis and identify potential historic properties and parks and recreational areas in order to determine whether any use of Section 4(f) properties would be required. For the purposes of this evaluation FRA has assumed that Alternative 6 would result in total avoidance of Section 4(f) properties.

Alternative 6 would compromise the project to a degree that it is unreasonable to proceed with the project in light of its stated Purpose and Need. The alignment would result in a slow and circuitous route on existing freight railroad alignment, and would therefore not reduce travel time along the NEC. While the alignment would eliminate some existing impediments to operations along the NEC such as the existing B&P Tunnel, new impediments would likely be introduced under this alternative such as speed-restricting curves and at-grade crossings that would substantially compromise the Purpose and Need.

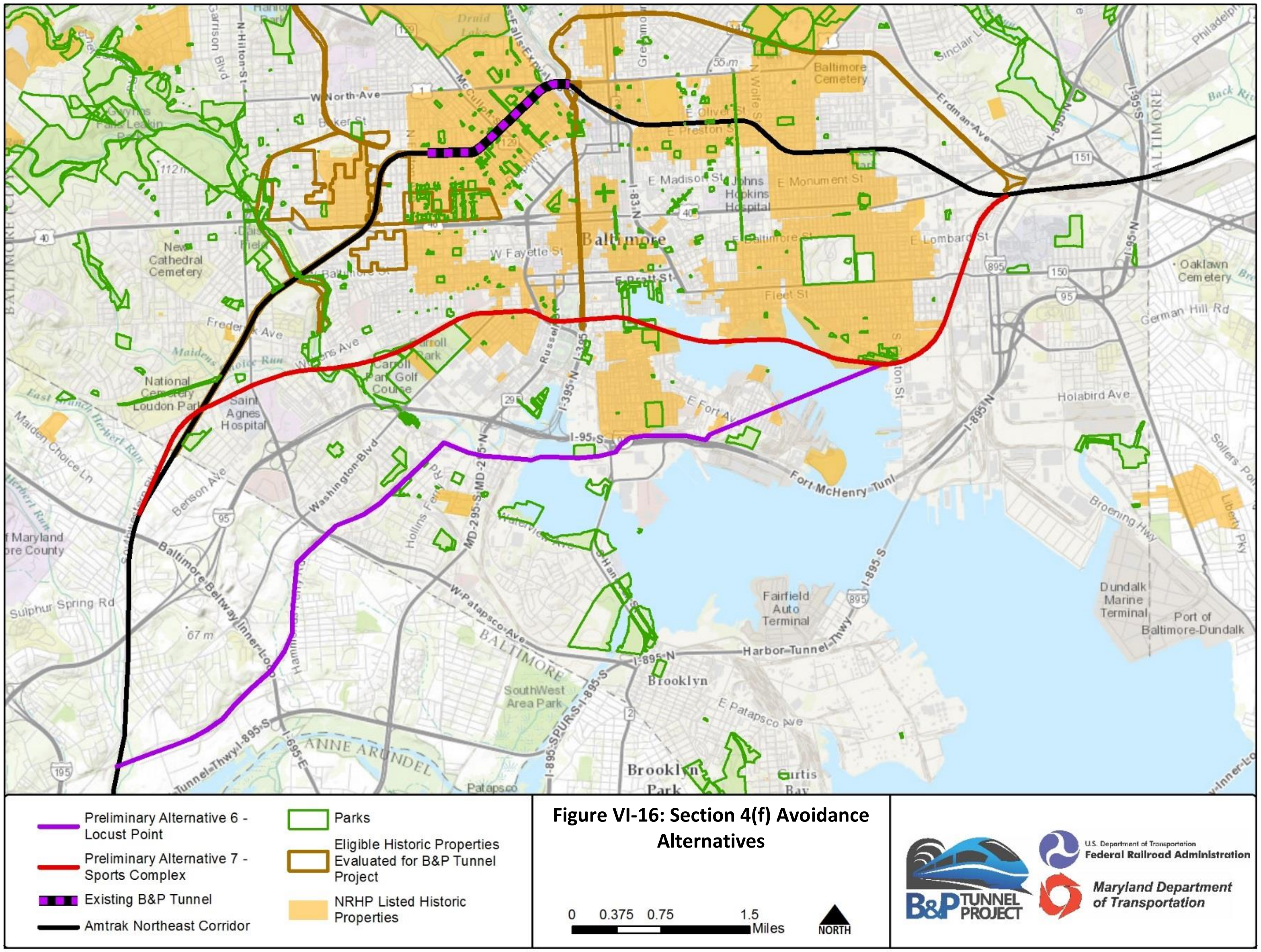

Figure VI-16: Section 4(f) Avoidance Alternatives

The alternative would result in unacceptable operational problems. The alternative would require Amtrak, CSX, NS, and MARC to all operate on the already overburdened CSX corridor, resulting in unacceptable operational problems such as delays resulting from conflicts between passenger and freight service. One major flaw of the alternative is that it would require a new station to replace Baltimore Penn Station, and no advantageous station location has been determined to replace it. Furthermore, discontinuing service to Baltimore Penn Station would be inconsistent with the currently active Baltimore Penn Station Master Plan, described in **Section II.E.4.j**. Additional details on the operational problems caused by Alternative 6 are documented in the 2011 *Baltimore's Railroad Network: Analysis and Recommendations* report.

The construction of a new intercity passenger rail station required under Alternative 6 would also create operational problems for maintaining commuter service along the existing MARC Penn Line. The relocated NEC would be in the vicinity of the existing MARC Camden Line, but additional infrastructure improvements such as restoration of the existing tunnel would be required to maintain MARC Penn Line service to the existing stations at West Baltimore MARC and Baltimore Penn Station.

Alternative 6 would result in additional construction and maintenance costs of an extraordinary magnitude due to the inability to utilize existing infrastructure at Baltimore Penn Station and the West Baltimore MARC Station. FRA eliminated this alternative from consideration during the Preliminary Alternatives Screening phase of the Project, as documented in the PASR, due to the alignment bypassing existing infrastructure. FRA considered this a "fatal flaw" as described in the PASR and summarized in **Section III.B**.

FRA has determined that Alternative 6: Locust Point is therefore not a prudent avoidance alternative. The alternative would compromise the Project to a degree that it is unreasonable to proceed with the Project in light of its stated Purpose and Need; it would result in unacceptable operational problems, and would result in additional construction and maintenance costs of an extraordinary magnitude.

d. Preliminary Alternative 7: Sports Complex

Preliminary Alternative 7: Sports Complex was conceptualized to serve, in particular, the Inner Harbor area of downtown Baltimore. The alignment would divert from the Amtrak NEC about 0.5 miles north of the I-695 Baltimore Beltway over crossing in southwest Baltimore. The alignment would follow Wilkins Avenue and transition into a tunnel section, continuing eastward to a location between the Oriole Park at Camden Yards baseball stadium and the M&T Bank Stadium. This would be the site for a downtown underground station in lieu of service to Baltimore Penn Station. The alignment would continue eastward in new tunnels under the Northwest Branch, past Fells Point to the vicinity of Boston Street where the alignment would curve to the northeast. Cut-and-cover tunneling would begin near Boston Street with a portal located near Eastern Street on an existing NS route. The NS tracks would be used until Bayview Junction where the alignment would rejoin Amtrak's NEC.

The alternative would avoid Section 4(f) properties by bypassing the more densely developed and historic central portion of Baltimore near Baltimore Penn Station and traveling through a tunnel below the heart of downtown Baltimore and the Inner Harbor. While the alternative does not appear to result in the use of Section 4(f) properties, FRA would need to complete further engineering analysis in order to determine whether any use of Section 4(f) properties would be required. However, for the purposes of this evaluation FRA assumes that Alternative 7 would result in total avoidance of Section 4(f) properties.

Alternative 7 would result in additional construction and maintenance costs of an extraordinary magnitude due to the length of the tunnel alignment and need for a new underground station in the central business district. An underground station, in particular, would be extraordinarily expensive due to the amount of excavation required underneath the densely developed central business district of Baltimore.

The alternative would also result in operational problems similar to Alternative 6 regarding the MARC Penn Line, resulting from the relocation of the NEC away from the existing Baltimore Penn Station. Additional infrastructure improvements, such as restoration of the existing tunnel, would be required to maintain MARC Penn Line service to the existing stations at West Baltimore MARC and Baltimore Penn Station.

Alternative 7 would also potentially result in severe impacts to environmental resources such as wetlands and floodplains due to the need for substantial length of new tunnels located underneath the Baltimore Harbor.

FRA does not consider Alternative 7: Sports Complex to be a prudent avoidance alternative due to the additional construction and maintenance costs of an extraordinary magnitude, operational problems resulting from relocating the NEC away from Baltimore Penn Station, and potential for impacts to protected environmental resources such as wetlands.

3. All Possible Planning to Minimize Harm

Through the avoidance analysis, FRA has determined there are no feasible and prudent avoidance alternatives for this Project. FRA has refined the alternatives throughout the alternatives development process to incorporate all possible planning to minimize harm to Section 4(f) properties. “All possible planning” includes all reasonable measures to minimize harm and mitigate for adverse impacts and effects. FRA has designed the Preferred Alternative to further minimize harm, including minimization measures such as shifts to the alignment, narrowed track spacing, and a relocated Intermediate Ventilation Facility. Mitigation will be used when impacts to Section 4(f) resources cannot be eliminated through avoidance or minimization measures.

a. Minimization

In response to public comments and to minimize environmental impacts, including impacts to Section 4(f) resources, FRA has refined the Preferred Alternative (Alternative 3B) since publication of the DEIS. FRA shifted the horizontal and vertical alignment of the tunnel and south portal approach tracks shifted and narrowed the south portal approach track spacing to reduce the project footprint at that location. FRA also shifted the alignment west of the existing right-of-way in the vicinity of Franklin and Mulberry Streets so that the alignment stays closer to the existing right-of-way and reduces impacts compared to the Alternative 3B alignment presented in the DEIS.

FRA refined the design of the Preferred Alternative alignment to minimize impacts to historic resources in the south portal area while still retaining the speed benefits from improving Curve 381. The Preferred Alternative alignment would pass between the Ward Baking Company and Atlas Storage Company Warehouse properties; avoiding demolition of the Ward Baking Company building and one of the two buildings in the Atlas Storage Company Warehouse complex that would have been demolished by the DEIS Alternative 3B. Project Consulting Parties expressed a preference to avoid impacts to both the Ward Baking Company building and the Atlas Storage Company property, but indicated that the Atlas Storage Company property was of less relative importance. The Preferred Alternative alignment also impacts fewer resources contributing to historic districts. Revisions to the design reduced the impacts to historic resources from 51 demolitions in the DEIS Alternative 3B to 31 demolitions in the Preferred Alternative. The alignment was shifted to reduce impacts while still avoiding demolition of other key historic resources near the south portal, such as the Fire Department Engine Company No. 36 and American Ice Company buildings. **Section III** provides more information comparing the DEIS Alternative 3B to the current Preferred Alternative.

b. Mitigation

For Section 4(f) uses that cannot be avoided or further minimized, FRA will incorporate all reasonable and feasible mitigation measures into the Project. Mitigation would be commensurate with the severity of the impact on the Section 4(f) resource. FRA has determined potential historic resource mitigation commitments through consultation with the officials having jurisdiction over each resource. At this stage of the Project, FRA has developed mitigation concepts to include in final design as described below and specified in a draft Programmatic Agreement (PA) in **Appendix H**. FRA has prepared the PA in accordance with Section 106 of the National Historic Preservation Act, as amended. The Draft PA includes mitigation measures developed in coordination with the SHPO (Maryland Historical Trust) and Project Consulting Parties. These measures will be fully designed and implemented during the final design and construction phases of the Project.

Mitigation measures have been included in the Draft PA and are intended to be implemented as mitigation for impacts to historic resources resulting from the Preferred Alternative. These measures are subject to revision until the Draft PA is finalized. More detail of each measure is included in the Draft PA, but the following list is an overview of these measures.

- Subject to specified conditions, the Preferred Alternative proposes establishment of an architectural historic properties preservation fund to address adverse effects to historic properties.
- The Preferred Alternative proposes development of context-sensitive design treatments for new construction informed by the features of the affected historic properties.
- The Preferred Alternative proposes that relevant historic properties, including contributing elements of historic districts, be screened with appropriate sound barriers and/or vegetation when appropriate.
- The Preferred Alternative proposes development of cultural resources construction protection plans designed to protect above-and below-ground known and unknown historic properties from adverse effects during construction activities. Plans will address vibration monitoring, stockpiling, and truck routes/hauling.
- The Preferred Alternative proposes preparation of written and photographic documentation consistent with Level II Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER) standards for deposit within the MHT, for the historic properties, including contributing elements of historic districts, directly adversely affected.
- The Preferred Alternative proposes preparation of interpretive material including signs and/or displays and brochure to be located in Baltimore’s Pennsylvania Station. Possible themes may include the history of the B&P Tunnel, the history of the Pennsylvania Railroad and Pennsylvania Station, the influence of railroads on Baltimore City, and/or archaeological findings in the project area as relevant.
- The Preferred Alternative proposes that oral history interviews will be conducted as part of the Preferred Alternative, particularly with older, long-time residents of neighborhoods like Midtown Edmonson and Reservoir Hill, and pre-Amtrak railroad employees, made as audio and/or video recordings in addition to written transcripts.
- The Preferred Alternative proposes securing, stockpiling, and making available salvaged building materials from the demolition of historic properties and contributing elements to historic districts.
- The Preferred Alternative proposes establishment, partnering with, and/or linking to electronic informational sites in order to make available to the public information, products and updates from the Section 106 process and relevant stipulations of the PA. Partner, if warranted with established preservation/history organizations with existing electronic outreach programs.
- The Preferred Alternative proposes completion of a Phase I Archaeological Survey sufficient to identify archaeological resources that may be affected by the Project. A Phase II archaeological survey shall be conducted to evaluate the identified resources for NRHP eligibility. If an adverse effect cannot be alternatively mitigated, The Project shall develop a Phase III research design/treatment plan for each NRHP –eligible archaeological resource adversely effected by the Undertaking.

- The Preferred Alternative proposes investigation of the history, development, use, and evolution of the station facilities and yards comprising present-day Pennsylvania Station in Baltimore City for the purposes of clarifying and delineating the official boundaries of railroad-related NRHP-listed and eligible historic properties.

c. Analysis of Least Overall Harm

If there is no feasible and prudent avoidance alternative, FRA may only approve the alternative that results in the least overall harm in light of Section 4(f)'s preservation purpose. FRA has conducted the least overall harm analysis by considering the following factors (as set forth in 23 CFR 774.3(c)(1)):

- The ability to mitigate adverse impacts to each Section 4(f) Property
- Severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection
- The relative significance of each Section 4(f) Property
- The views of the official(s) with jurisdiction over each Section 4(f) Property
- The degree to which each alternative meets the Purpose and Need for the Project
- After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f)
- Substantial differences in costs among the alternatives

As described above, FRA has evaluated numerous alternatives throughout the NEPA process and determined that there are no feasible and prudent alternatives that completely avoid the use of Section 4(f) properties. Therefore, since all alternatives use Section 4(f) properties, FRA has undertaken a least harm analysis to determine the alternative with the least overall harm. **Table VI-13** above provides an overview of Section 4(f) impacts resulting from each of the build alternatives. Below is a summary of FRA's analysis with respect to each factor.

The ability to mitigate adverse impacts to each Section 4(f) Property

The Section 4(f) uses that FRA has identified in each of the build alternatives primarily involve the demolition of buildings that contribute to a historic district and/or that are individually eligible historic resources. Thus, the mitigation strategies FRA would employ are similar among all alternatives. More information on potential mitigation measures for the Preferred Alternative is available in **Chapter VII.**

FRA, in coordination with MHT and the Project Consulting Parties, has developed an extensive set of cultural resource mitigation measures through the Section 106 process to mitigate for the impacts of the Preferred Alternative. The PA (see draft in **Appendix H**) will document the terms and conditions agreed upon by the signatories to resolve the potential adverse effects on historic properties. The mitigation measures are summarized above.

Severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection

Alternative 3A would result in use of the fewest Section 4(f) properties of all the build alternatives. FRA has refined Alternative 3B to minimize use of Section 4(f) properties in the Preferred Alternative. The Preferred Alternative would result in use of fewer overall historic properties and historic contributing resources than Alternative 3C, though it would require a greater number of demolitions than Alternatives 3A and 3C. Alternative 3A and the Preferred Alternative would avoid demolition of several individually-eligible historic properties including the Ward Baking Company and the Fire Department Engine Company No. 36 buildings, both of which would be demolished under Alternative 3C. The Preferred Alternative would require demolishing only the rear building of the Atlas Storage Company building, reduced reduction from the DEIS Alternative 3B impact to the Atlas Storage Company.

The relative significance of each Section 4(f) Property

Individually-listed or eligible historic properties are considered by MHT and the Project Consulting Parties to be of greater significance than resources contributing to historic districts. The Preferred Alternative and Alternative 3A would avoid use of the Ward Baking Company and Fire Department No. 36, two individually eligible properties that Alternative 3C would demolish. The Project Consulting Parties indicated through Section 106 consultation that the Ward Baking Company building is a higher preservation priority than the Atlas Storage Company Warehouse complex, which would be partially demolished by the Preferred Alternative.

The views of the official(s) with jurisdiction over each Section 4(f) Property

The Project Consulting Parties, including MHT, expressed the following views at Project Consulting Parties meetings:

- The Ward Baking Company building has greater historic importance than the Atlas Storage Company Warehouse complex.
- Preserving a portion of a resource with multiple buildings (such as the Atlas Storage Company property) is preferable to demolishing all of the resource.
- The American Ice Company building is the most important building to protect in the project area.
- Individually listed or eligible resources warrant higher preservation priority than elements contributing to historic districts that are not individually eligible.
- An Intermediate Ventilation Facility on the periphery of the Reservoir Hill Historic District is preferable to one in its interior.

A summary of each Project Consulting Parties meeting is included on the Project website (www.bptunnel.com).

The degree to which each alternative meets the Purpose and Need for the Project

The Preferred Alternative and Alternative 3C would meet the Project Purpose and Need to a greater degree than Alternative 3A. The Preferred Alternative and Alternative 3C would better meet the Project goal of reducing travel time through the B&P Tunnel and along the NEC by providing higher travel speeds and thus faster travel times along the NEC through the Study Area. Alternative 3A would improve travel times by a lesser amount than the Preferred Alternative or Alternative 3C. **Table VI-14** provides travel time savings information comparing the Preferred Alternative, Alternative 3A, and Alternative 3C. The Preferred Alternative and Alternative 3C would also accommodate accessible high-level platforms at West Baltimore MARC, which Alternative 3A would permanently preclude in the station’s current location. Because they allow for high-level platforms at the current station location, the Preferred Alternative and Alternative 3C better meet the Purpose and Need regarding accommodation of existing and projected travel demand for commuter passenger service, and eliminating impediments to existing and projected operations along the NEC.

Table VI-14: Estimated Travel Time Savings from Build Alternatives

Service	Alternative 3A	Preferred Alternative (Alternative 3B)	Alternative 3C
Amtrak ACELA	2:00	2:31	2:30
Amtrak Regional	1:55	2:32	2:23
MARC	1:38	1:49	1:44

Note: Average of northbound/southbound trains.

After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f)

Alternative 3A would have no impacts to residences or community facilities as it uses of existing Amtrak right-of-way and surrounding industrial land in the south portal vicinity. Alternative 3A would impact nine businesses including a portion of the P. Flanigan Asphalt facility (a major local employer).

The Preferred Alternative would impact 22 residences in the south portal vicinity, all located within minority and low income communities. Five of these 22 residences are estimated to be vacant. An additional 29 residential properties would be affected without requiring demolition. The Preferred Alternative would displace approximately 13 businesses and four community facilities. The Preferred Alternative would avoid direct impacts to the P. Flanigan Asphalt facility.

Alternative 3C would impact 12 residences in the south portal vicinity, all located within minority and low-income communities. Three of the 12 residences are estimated to be vacant. An additional 35 residential properties would be impacted without requiring demolition. Alternative 3C would impact approximately one community facility and 16 businesses, including the P. Flanigan Asphalt Company.

Substantial differences in costs among the alternatives

Based on preliminary estimates, Alternative 3A would have the lowest capital cost at an estimated $3.8 billion. The Preferred Alternative would cost an estimated $4.0 billion, and Alternative 3C would have the highest estimated capital cost at $4.2 billion. These preliminary cost estimates do not include mitigation or the preferred Intermediate Ventilation Facility site.

d. Conclusion

Alternative 3A would use the least number of Section 4(f) properties. Both the Preferred Alternative and Alternative 3C would have greater Section 4(f) impacts compared to Alternative 3A, which would require fewer demolitions and fewer overall Section 4(f) resources used. The Preferred Alternative would have less severe Section 4(f) impacts compared to Alternative 3C because it uses fewer Section 4(f) properties and avoids demolishing two important individually eligible historic properties, the Ward Baking Company and Fire Engine Co. 36 buildings. Both of these would be demolished under Alternative 3C, and were recommended as high priority for preservation by the Project Consulting Parties and MHT. The Preferred Alternative would impact more historic rowhomes contributing to the Greater Rosemont, Midtown-Edmonson, and Edmonson Avenue Historic Districts; however, many of these have relatively less historic integrity due to their poor physical condition and thus may have less historic significance than individually eligible buildings.

The Preferred Alternative and Alternative 3C would meet Purpose and Need to a much greater degree than Alternative 3A because they both improve the existing curve (Curve 381) along the NEC where the West Baltimore MARC Station is currently located, thus eliminating an impediment to existing and projected operations along the NEC. The Preferred Alternative or Alternative 3C would allow for higher train speeds and greater travel time savings along the corridor compared to Alternative 3A (**Table VI-14**), and thus would better meet the stated Purpose and Need regarding reducing travel time through the B&P Tunnel along the NEC.

The Preferred Alternative and Alternative 3C would also allow for accessible high-level platforms at the West Baltimore MARC Station, thus better accommodating existing and projected travel demand for commuter passenger service and eliminating impediments to operations along the NEC. Improvements to Curve 381 would be precluded for the lifespan of the new tunnel under Alternative 3A, preventing future speed improvements and ADA accessible MARC platforms in the current station location.

After balancing the factors above, particularly the relative ability to meet the Purpose and Need, FRA has determined that Alternative 3B, as modified in this FEIS, has the least overall harm in light of the Section 4(f) statute's preservation purpose, and has thus identified it as the Preferred Alternative. The Preferred Alternative has less severe impacts to Section 4(f) resources compared to Alternative 3C and meets the Project Purpose and Need to a greater degree than Alternative 3A. Moreover, the substantial mitigation measures included in the Preferred Alternative, developed in consultation with Project Consulting Parties and MHT and included in the draft PA (**Appendix H**), will help to mitigate the impacts to Section 4(f) resources resulting from the Preferred Alternative. Though the Preferred Alternative requires greater use of Section 4(f) resources compared to Alternative 3A, the benefits of meeting the Purpose and Need to a greater degree outweighs the remaining harm, after mitigation, to Section 4(f) properties.

E. Natural Resources

Impacts to natural resources are shown on **Figure VI-17**. No impacts to natural resources would occur under Alternative 1: No-Build. Additional information regarding impacts to natural resources, is available in the *Natural Resources Technical Report.*

1. Soils

a. Alternative 1: No-Build

No impacts would occur under Alternative 1: No-Build. No improvements beyond maintenance would occur, thus no soils would be impacted.

b. Preferred Alternative

The Preferred Alternative would remove large quantities of soil through either tunnel boring or cut-and-cover construction. Construction areas would also expose the soil surface in portal and vent shaft locations, requiring stabilization to limit surface runoff and sediment pollution to surface waters. Soil types within the Study Area will not likely be significantly impacted by the Preferred Alternative, as the soil is already highly urbanized.

c. Alternative 3A

Impacts to soils resulting from Alternative 3A would be similar to the Preferred Alternative as described above.

d. Alternative 3C

Impacts to soils resulting from Alternative 3C would be similar to the Preferred Alternative as described above.

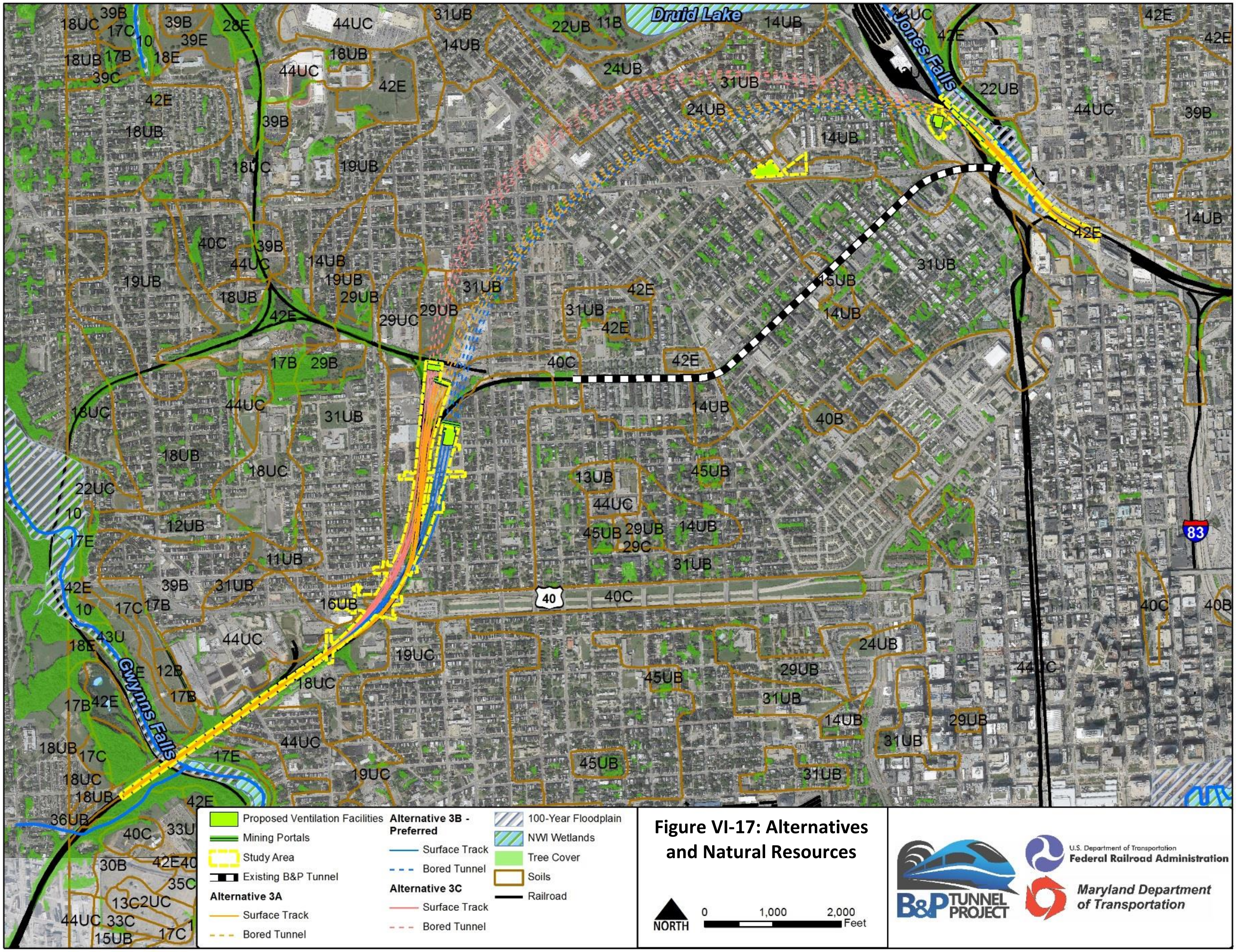

Figure VI-17: Alternatives and Natural Resources

2. Topography, Geology, Aquifers, and Groundwater

a. Alternative 1: No-Build

No impacts would occur under Alternative 1: No-Build. No improvements beyond maintenance would occur, thus topography, geology, aquifers, and groundwater would not be impacted.

b. Preferred Alternative

The elevations used in assessing topography, geology, aquifers, and groundwater were based on a review of the *Map of Baltimore City Showing the Configuration of the Underlying Rock Floor* (Baltimore City, 1935). These elevations were based on the datum in use in 1935, not the accepted present day datum, and are approximate.

Most of the Preferred Alternative alignment would be located below the upper contour of the mapped surface of the rock, except south of Presstman Street where it would start to emerge from the rock into mixed face conditions. A similar situation would be encountered east of Mt. Royal Avenue to the north portal.

The Study Area overlies the Piedmont Crystalline Rock Aquifer, an underground layer of water-bearing rock. Groundwater recharge is highly variable in this region, since it is almost entirely dependent on precipitation and local runoff that is absorbed through the regolith and into rock fractures (Trapp, H. and M.A. Horn, 1997). No Sole Source Aquifers, active water supply reservoirs, or wells are located near the Preferred Alternative, thus there would be no impact to these resources. Surface water from rainfall and snowmelt is the source of the Baltimore City drinking water supply. Further discussion of groundwater is included in **Section VI.E.3** below.

c. Alternative 3A

Alternative 3A would be similar to the Preferred Alternative regarding topography, geology, aquifers and groundwater as described above.

d. Alternative 3C

Alternative 3C would be similar to the Preferred Alternative regarding topography, geology, aquifers and groundwater as described above.

3. Water Resources

a. Alternative 1: No-Build

No impacts would occur under Alternative 1: No-Build.

b. Preferred Alternative

Streams and Navigable Waterways

The Jones Falls, the Gwynns Falls, and a tributary of the Gwynns Falls are located within the Study Area. The Preferred Alternative would remain on existing structures over these waterbodies, and therefore will not directly impact them.

Wetlands

The Preferred Alternative would not directly or indirectly impact wetlands. The two NWI wetlands near the Study Area are located away from the Preferred Alternative.

Water Quality

Minor impacts to water quality are possible from sediment and other construction-related runoff, but would be limited by required erosion and sediment control measures. An Erosion and Sediment Control Plan for construction activities would be developed during the final design phase.

The Gwynns Falls and a tributary of the Gwynns Falls would not be impacted by the Preferred Alternative, which would remain on existing structures over these waterways.

The Preferred Alternative includes measures to ensure compliance with all applicable stormwater management regulations. A stormwater Management Plan will be developed during the final design stage of the Project and implemented in coordination with the City of Baltimore and MDE. The plan will focus on stormwater runoff associated with construction activities and surface impacts, both temporary and permanent, throughout the Study Area.

Groundwater

Technical specifications will require the excavation contractor to be responsible for the collection, control and disposal of all groundwater infiltration and other water sources during construction. Low inflow rates into excavations are currently anticipated and the water may be simply channeled to the invert and directed to flow by gravity back to the south portal or a shaft collection point from which it can be pumped to the surface. The flow can also be captured in advance by small local sumps spaced along the tunnel to collect the water and then pumped to the surface.

The main running tunnels will be bored by pressurized-face Tunnel Boring Machines (TBMs) using a precast concrete segmental lining which functions simultaneously as both ground support and waterproofing. The precast lining is installed by a special TBM component; the lining is installed immediately as the TBM moves forward. Behind the TBM, the completed lining will have essentially no flowing water. Any significant water bearing zones ahead of the TBM excavation (which is not currently expected) can be quickly completely sealed off due to the type of TBM (pressurized-face). The water bearing zone can then be locally grouted (though a sealing system) if needed before excavation proceeds further.

There will be some freshwater lines to the TBM for activities such as cooling certain motors. Once used, this water will be piped back to a wastewater collection point for required processing. Other parts of the tunnels excavated by non-TBM methods (e.g. drill & blast) will generate some water volumes (expected to be low) of both groundwater inflows and drilling water. Thus, overall, the collection, diversion and disposal of any captured groundwater plus any return water from the TBM and other excavation machinery will be the responsibility of the contractor. The collection/diversion system will be compatible with the contractor’s actual final excavation methods and sequences. The disposal will be in accordance with all applicable local, state and federal environmental regulations, which vary depending on the groundwater chemistry, the presence of suspended solids, and the potential for groundwater contaminants.

Currently, it is anticipated that no major active dewatering equipment (e.g., deep wells, ejectors, vacuum well points, etc.) will be required or allowed outside the limits of the excavations, so any groundwater requiring handling will come exclusively from within the excavations. Two exceptions may be the north portal area and the plenum tunnel which may require some minor horizontal dewatering. This would be contained within the north portal excavation area and within the plenum tunnel excavation.

It is proposed to discharge collected groundwater into public sewers near project areas in accordance with the applicable regulations at each particular discharge site. Before discharge, some forms of treatment are expected to be necessary. As a minimum, the removal of suspended solid and removal of oils/greases would be addressed.

Floodplains and Flood Hazards

The Preferred Alternative would impact approximately 3.4 acres of the Jones Falls' 100-year and 500-year floodplains. This impact would include permanent impact from new track construction, as well as temporary impact from construction staging areas. The floodplain of the Gwynns Falls would not be impacted. Because the north portal would be within the Jones Falls floodplain, final design of the Preferred Alternative would be designed to minimize flood hazard risk for the new infrastructure.

c. Alternative 3A

Alternative 3A would not differ from the Preferred Alternative with regard to impacts to water resources including streams and navigable waterways, wetlands, water quality, floodplains and flood hazards, or groundwater as described above.

d. Alternative 3C

Alternative 3C would not differ from the Preferred Alternative with regard to impacts to water resources including streams and navigable waterways, wetlands, water quality, floodplains and flood hazards, or groundwater as described above.

4. Coastal Zone

Although the project is within Baltimore City, a designated portion of Maryland's Coastal Zone, no impacts are anticipated. However, due to project location, Coastal Zone Consistency is required. The Coastal Zone Consistency would be issued after final design by MDE as part of the floodplain impact authorization. The federal consistency requirements are carried out by the Coastal Zone Consistency Division of MDE. Coastal Zone Consistency determines whether proposed activities are consistent with the enforceable policies of the State's Coastal Zone Management Program.

a. Alternative 1: No-Build

No impacts would occur under Alternative 1: No-Build.

b. Preferred Alternative

No impacts would occur under the Preferred Alternative.

c. Alternative 3A

No impacts would occur under Alternative 3A.

d. Alternative 3C

No impacts would occur under Alternative 3C.

5. Wildlife and Habitat

a. Alternative 1: No-Build

No impacts would occur under Alternative 1: No-Build.

b. Preferred Alternative

The B&P Tunnel would have minor impacts on wildlife and their habitat, since most of the project will take place underground. Above-ground trackwork, portals, and ventilation facilities will primarily impact urban areas with little habitat value.

Aquatic Habitat

The Jones Falls, Gwynns Falls, and a tributary of the Gwynns Falls are located within the Study Area. These waterways and associated aquatic habitats would not be directly impacted by the Preferred Alternative. Since the Study Area is located within a highly urbanized area, the Preferred Alternative is anticipated to have no adverse impact on aquatic habitat.

Terrestrial Habitat

Trees, hedgerows, and forest stands were identified based on field review conducted from public right-of-way. The Preferred Alternative would impact a total of approximately 106,400 SF of forest stands and 60,700 SF of hedgerow.

Street trees would be affected due to construction impacts near the tunnel portals and ventilation facilities. Approximate impacts to street trees within the portal and vent shaft locations of the Preferred Alternative are included in **Table V-15**. No specimen trees were identified in the Study Area. No street trees are anticipated to be affected within the north portal location. Approximately seventy-four street trees would be impacted within the south portal area. Approximately seventeen street trees and ten landscaped trees within the property boundary would potentially be impacted by the Intermediate Ventilation Facility at 900-940 West North Avenue.

Table VI-15: Potential Street Tree Impacts

Project Area	Preferred Alternative Number of Trees Affected
North Portal	0 street trees
South Portal	74 street trees
Intermediate Ventilation Facility, 900-940 West North Avenue	27 street trees and landscaped trees

Invasive Species

The Study Area is located in residential, industrial, and railroad areas. Non-native, invasive species commonly found within the study area that would be impacted by the Preferred Alternative include Princess tree (*Paulownia tomentosa*), Tree of Heaven (*Ailanthus altissima*), Norway maple (*Acer platanoides*), multiflora rose (Rosa multiflora), Oriental Bittersweet (*Celastrus orbiculatus*), and Japanese honeysuckle (*Lonicera japonica*). Construction in portal and vent shaft areas has the potential to spread invasive species by creating new areas of disturbance in which these opportunistic species can spread quickly.

c. Alternative 3A

Alternative 3A would have minor impacts on wildlife and their habitat, since most of the project would take place underground. Above-ground trackwork, portals, and ventilation facilities would primarily impact urban areas with little habitat value. No adverse impact to aquatic habitat is expected under Alternative 3A, as described above for the Preferred Alternative. Portal areas for Alternative 3A would impact approximately 64,200 SF of forest stand, 88,100 square feet of hedgerow and one street tree. Alternative 3A would impact the same 27 street trees and landscaped trees at the Intermediate Ventilation Facility as the Preferred Alternative. Alternative 3A would not differ from the Preferred Alternative with regard to invasive species as described above.

d. Alternative 3C

Alternative 3C would have minor impacts on wildlife and their habitat, since most of the project will take place underground. Above-ground trackwork, portals, and ventilation facilities will primarily impact urban areas with little habitat value. No adverse impact to aquatic habitat is expected under Alternative 3C, as described above for the Preferred Alternative. Portal areas for Alternative 3C would impact an estimated 84,200 SF of forest stands, 126,600 SF of hedgerows, and 35 street trees. Alternative 3C would impact the same 27 street trees and landscaped trees at the Intermediate Ventilation Facility as the Preferred Alternative. Alternative 3C would not differ from the Preferred Alternative with regard to invasive species as described above.

6. Rare, Threatened, and Endangered Species

a. Alternative 1: No-Build

No impacts would occur under Alternative 1: No-Build.

b. Preferred Alternative

The USFWS has concurred that no Maryland or federally-listed threatened or endangered species are known to exist within the Study Area. The Preferred Alternative would therefore not impact threatened or endangered species. Agency correspondence regarding rare, threatened, and endangered species is included in **Appendix B** as well as the *Natural Resources Technical Report*.

c. Alternative 3A

Alternative 3A would not impact threatened or endangered species, as described above for the Preferred Alternative.

d. Alternative 3C

Alternative 3C would not impact threatened or endangered species, as described above for the Preferred Alternative.

7. Mitigation

The Project includes the following mitigation measures that correspond with the Project’s impacts to natural resources, including avoidance and minimization considerations. Although the following measures correspond with the Preferred Alternative, similar measures would be appropriate to mitigate natural resources impacts of Alternative 3A and Alternative 3C.

a. Soils

The majority of soils potentially affected by the Preferred Alternative have already been disturbed, manipulated, or covered by development. During construction, large areas of exposed soil can be eroded by wind and rain when vegetation and naturally occurring soil stabilizers are removed. The potential for soil and sedimentation impacts to water quality would be minimized by adhering to the MDE-approved Erosion and Sediment (E&S) Control plans, including best management practices (BMPs) such as silt fence, straw bales, and other methods to prevent sediment from entering surface waters. Stormwater management planning and design will occur later in the project design process.

Stormwater Management and Erosion and Sediment Control plans would be developed during final design for the Preferred Alternative. Mitigation measures for soil erosion and sediment control will be detailed in the MDE stormwater and E&S control permitting process documents, likely to include BMPs such as silt fencing and straw bales to limit sediment influx to surface waters.

b. Topography/Geology

Underground boring would have impacts on geology, but above ground topography is unlikely to change significantly. Dewatering would likely be needed in excavating the tunnel. Care will be exercised during construction to avoid settlements of the existing utilities and structures, and to monitor potential settlements. This will be crucial when boring under the existing Metro tunnel and when excavating in the mixed face and unconsolidated material near the portals.

Since there are no significant geologic resources within the study area corridor, no mitigation is expected to be required. The Preferred Alternative would not have a significant impact on geologic resources such as mines or quarries. Some grading and small changes to drainage patterns to redirect surface runoff may be required, but would be minimized under the E&S Control plans.

c. Water Resources

Water quality impacts would be minimized through the MDE stormwater and E&S control permitting process. Direct impacts to waterways and the 100-year and 500-year floodplains would be minimized in the aboveground portions of the project by maintaining construction within the existing track area at the north portal location and on existing structure in the south portal location.

A plan for floodplain mitigation would be developed during final design of the Preferred Alternative. A MDE Non-Tidal Wetlands and Waterways Permit would be required for work within the 100-year floodplain. In-water work is not anticipated for the Preferred Alternative, but if it were necessary, coordination would need to take place with MDE and the US Army Corps of Engineers (USACE). FEMA coordination would be required only if impacts were significant enough to require a floodplain map change.

Technical specifications will require the excavation contractor to be responsible for the collection, control and disposal of all groundwater infiltration and other water sources during construction. It is proposed to discharge collected groundwater into public sewers near project areas in accordance with the applicable regulations at each particular discharge site. Before discharge, some forms of treatment are expected to be necessary. As a minimum, the removal of suspended solids and removal of oils/greases would be addressed.

d. Coastal Zone

Coastal Zone consistency is required, but no impacts to the Coastal Zone are expected to result from this project and therefore no mitigation would be necessary.

e. Wildlife and Habitat

The B&P Tunnel project is proposed within a highly-urbanized environment. Terrestrial habitats are limited within the Study Area, thereby reducing the diversity of wildlife. Wildlife use of the affected areas would be expected to be limited due to their relatively small size, limited cover, and isolation from larger vegetated corridors. However, trees within the Study Area do provide habitat for urban wildlife species. Trees within forest stands, hedgerows, and the public road ROW are the primary natural resources that would be potentially impacted by the tunnel project. Specific tree impact avoidance and minimization techniques would be detailed in the Forest Conservation Plan (FCP). The Project would develop and implement a Street Tree Protection Plan and FCP as required during final design for the Preferred Alternative. Under the Preferred Alternative, affected street trees, forest stands, and hedgerows would be replaced in accordance with Baltimore City and Maryland DNR requirements. Mitigation within the ROW would be on a 1:1 basis, and on private land, landscaping and tree replacement would be considered within the immediate vicinity of the resource effects.

A Forest Conservation Worksheet will be prepared during the design stage to determine the amount of planting that will be required for mitigation. This worksheet will be used to calculate the amount of reforestation and afforestation planting required for the Preferred Alternative based on the area of the LOD, forest cleared and retained, and the applicable land use category.

Tree protection fencing, as indicated in the FCP, would be installed along the boundary between tree protection area LOS to prevent access by construction equipment and the staging and stockpiling of materials within tree protection areas. Additional construction techniques may be considered to avoid and minimize tree effects including tree wells, retaining walls, air spading, root aeration matting, and at-grade sidewalk construction.

An Erosion and Sediment Control Plan would be developed during the Final Design stage of the project for approval by MDE. The plan minimizes the potential for sediment and other construction-related runoff, including concrete wash-out, to leave the LOD and contaminate tree protection areas.

Construction in portal and ventilation facility areas has the potential to spread invasive species by creating new areas of disturbance in which these opportunistic species can spread quickly. The Street Tree Protection Plan and Forest Conservation Plan, as well as the landscape design to be completed during final design of the Preferred Alternative, will emphasize the planting of native vegetation and take into account the potential for spread of invasive species.

f. Rare, Threatened, and Endangered Species

No state or federally listed RTE species have been identified within the study area corridor, therefore no mitigation would be required.

F. Hazardous Materials

This section describes the environmental consequences for hazardous materials for the Preferred Alternative, Alternative 3A, and Alternative 3C in comparison to Alternative 1: No-Build. Mitigation measures addressing hazardous materials are listed below and in **Chapter VII**: Mitigation. Additional information regarding Alternatives 3A and 3C is included in the DEIS.

1. Alternative 1: No-Build

Alternative 1 presents little to no potential for the mobilization of hazardous materials or contaminants, as no construction activity will occur. Maintenance of the existing tunnel infrastructure may expose local residents and the surrounding community to hazardous materials as a result of spills or accidental releases of maintenance chemicals or supplies. Due to the lack of a major construction effort, occupational hazards would be low. Train traffic would continue to use the existing B&P Tunnel.

2. Preferred Alternative

The Preferred Alternative is expected to encounter contaminated soil and groundwater during construction activities near contaminated sites. The Preferred Alternative's at-grade alignment sections will require less management of contaminated materials compared to tunnel sections and deep utility relocations, which will require more effort to remove, handle, and dispose of contaminated materials.

Further targeted investigations will occur during the final design phase. Targeted investigations within the Preferred Alternative alignment and construction limits of disturbance (LOD) will identify existing contaminant conditions that could be mobilized during construction. Hazardous materials or contaminated sites in the vicinity of the Preferred Alternative will be identified, and, if they are encountered during the subsurface investigation, mitigation and remediation actions will occur in the design and construction phases of the project to minimize or eliminate potential impacts to the surrounding community or local environment.

Investigations should confirm the presence of subsurface contamination; type and extent of soil and groundwater contamination; migration direction and depth of groundwater contamination, if present; and proximity, direction, and relative elevation. Data will be used to assess potential effects of contaminated soil and groundwater on design and construction of the tunnel.

a. Sites of Concern

A total of 112 sites of concern were identified within one mile of the Preferred Alternative alignment (see **Table VI-16**), including 67 low-priority sites (see **Table VI-17**), 38 moderate priority locations (see **Table VI-18**) and 7 high-priority sites (see **Table VI-19** and **Figure VI-18)**. Hazardous material sites include residences, dry cleaners/laundromats, schools, automotive maintenance facilities, gas stations, fire stations, community resource centers, industrial properties, and railway yards within the Study Area. Eight low-priority sites of concern were identified within 500 feet of the Intermediate Ventilation Facility.

Table VI-16: Hazmat Sites Impacted under the Preferred Alternative

	# Low Priority Sites	# Medium Priority Sites	# High Priority Sites	Total Hazmat Sites
Preferred Alternative	67	38	7	112

Hazards associated with the low priority sites include petroleum, automotive, dry-cleaning, railway contamination, and 'hazardous waste' as well as industrial history and a Voluntary Cleanup Program (VCP) site. Half of the sites have current or historical petroleum use and/or release.

Table VI-17: Low Priority Hazardous Material Sites near the Preferred Alternative

Site ID #	Property Description	Address	Hazard Type
BP-011	Baltimore Pre-Release Unit	301 North Calverton Road	Petroleum use
BP-012	Baltimore Substation	239 North Calverton Road	Petroleum release
BP-015	City of Baltimore Franklin Street Yard	231 North Calverton Road	Petroleum release
BP-016	Lexington Auto Service/Motor Pool West	2560 West Lexington Street	Automotive and hazardous waste history
BP-019	Baltimore Uniform Rental, Inc.	2555 West Lexington Street	Petroleum use, Dry-cleaning history
BP-021	Former Acme Pad Factory	330 North Warwick Avenue	Petroleum release
BP-026	unknown	311 North Warwick Avenue	Petroleum release
BP-027	Cosmechem	215 North Warwick Avenue	Hazardous waste history
BP-032	Bentalou Elementary School	220 North Bentalou Street	Petroleum release
BP-033	Baltimore City	2305 W Franklin Street	Automotive history
BP-034	Victor Graphics	200 North Bentalou Street	Petroleum release
BP-039	Apex Oil, Co.	2109 West Lafayette Avenue	Petroleum release
BP-043	LA Auto Service	2124 Edmondson Avenue	Automotive history
BP-044	McDowell's Auto Service	2135 Edmondson Avenue	Automotive history
BP-047	Matthew A. Henson Elementary School	1600 North Payson Street	Petroleum use
BP-048	Keen Leasing, Inc.	1900 Elgin Avenue	Petroleum release
BP-058	Cloverland Dairy	2200 North Monroe Street	Petroleum use
BP-061	One & One Carry Out	1550 North Monroe Street	Automotive history

Site ID #	Property Description	Address	Hazard Type
BP-068	Kim property	1655 North Monroe Street	Petroleum release
BP-069	Sunoco Service Station	1829 Baker Street	Automotive history
BP-071	Papa Auto Parts	2218 Reisterstown Road	Petroleum release
BP-074	Perfect Cleaners	700 McKean Avenue	Dry-cleaning history
BP-081	People's Valet Service, Inc.	1827 North Fulton Avenue	Dry-cleaning history
BP-088	Parham & Spriggs Laundry	1704 West North Avenue	Dry-cleaning history
BP-089	F. A. Taylor	1568 Clifton Avenue	Petroleum release
BP-097	Mel and Logan Auto	2608 Pennsylvania Avenue	Automotive history
BP-098	Gilmore Homes, Baltimore Housing Authority	1601 Vincent Court	Petroleum release
BP-100	National Auto Repair	2600 Pennsylvania Avenue	Automotive history
BP-102	Westside Elementary School	2335 North Fulton Avenue	Petroleum release
BP-104	Colonial Launderers	2542 Pennsylvania Avenue	Dry-cleaning history
BP-107	Whitelock Towing	2634 Flora Street	Petroleum release
BP-110	Fish Rental Services	2565 Pennsylvania Avenue	Petroleum use, Dry-cleaning history
BP-112	Wareheim's Garage	2480 Woodbrook Avenue	Automotive history
BP-113	Baltimore Transit Co. – Retreat Street Repair Shop	1511 Retreat Street	Automotive history, Railway history
BP-114	residence	717 Cumberland Street	Petroleum release
BP-115	Former auto service facility (Theo Messersmith)	2468 Woodbrook Avenue	Automotive history
BP-116	CVS Pharmacy	2523 Pennsylvania Avenue	hazardous waste history
BP-122	H&B Manufacturing Co., Inc.	1415 Retreat Street	Automotive history
BP-128	City of Baltimore	2311 Pennsylvania Avenue	Petroleum release
BP-130	residence	2427 Francis Street	Petroleum use
BP-145	Exxon #22758	1201 West North Avenue	Petroleum release
BP-147	Former auto service facility (Jason Litchfield)	1006 Whitelock Street	Automotive history
BP-155	Penrose property	2520 Linden Avenue	Petroleum release
BP-156	Amoco Station	1101 West North Avenue	Petroleum release
BP-163	Wonder Cleaners & Tailors	954 Whitelock Street	Dry-cleaning history
BP-165	Lee, Sun F	925 Whitelock Street	Dry-cleaning history
BP-167	Housing & Urban Development	827 Druid Park Lake Drive	Petroleum release
BP-168	Crown Station (Quest Station)	1001 West North Avenue	Petroleum use
BP-169	Former Cove One Hour Cleaners	919 Whitelock Street	Dry-cleaning history
BP-170	Snow White Self Service Laundry	915 Whitelock Street	Dry-cleaning history
BP-172	Fish Dry Cleaning & Laundry Co.	2270 Brookfield Avenue	Dry-cleaning history
BP-174	VI Contracting Site	841 Whitelock Street	Petroleum release
BP-179	Minor's Cleaners	1800 Linden Avenue	Dry-cleaning history
BP-194	Tune Up City, Inc.	701 Whitelock Street	Automotive history
BP-205	Sisson Realty Company/Sun Cab	2600 Sisson Street	Petroleum release
BP-208	Baltimore Fire Department, Aerial Tower 111	401 West North Avenue	Petroleum use
BP-209	Southern Fuel Company	401 West 26th Street	Petroleum release
BP-210	Lincoln Motor	410 West North Avenue	Automotive history

Site ID #	Property Description	Address	Hazard Type
BP-211	AAA Mid-Atlantic Inc.	1401 West Mount Royal Avenue	Petroleum use
BP-212	Maryland Institute College of Art - Fox Building	1341 Dickson Street	Petroleum use
BP-213	Bolton Yard	80 West Oliver Street	VCP action
BP-215	Maryland Institute College of Art	113 West North Avenue	Petroleum release
BP-216	Maryland Community Resource Center	1734 Maryland Avenue	Petroleum release
BP-218	Penn Esso Station	1716 Maryland Avenue	Automotive history
BP-220	Atlantic Automobile Repairs	6 West Lanvale Street	Automotive history
BP-222	Binswanger, Sylvan W	2 East Lanvale Street	Automotive history
BP-225	National Auto Radiator and Fender Company Inc.	9 East Lanvale Street	Automotive history

Hazards associated with the medium priority sites include petroleum, automotive, dry-cleaning, railway contamination, and ‘hazardous waste,’ as well as industrial history and coal use, Brownfields, and VCP sites. Half of the sites have current or historical petroleum use and/or release.

Table VI-18: Medium Priority Hazardous Material Sites near the Preferred Alternative

Site ID #	Property Description	Address	Hazard Type
BP-013	L & J Processing Facility	222 North Calverton Road	Hazardous waste history
BP-017	Can-Do Fuel Oil Company, Inc.	2527 Baker Street	Petroleum contamination
BP-018	Maryland Lumber Co.	2601 West Franklin Street	Petroleum release
BP-020	Emanuel Tire, LLC	1300 Moreland Avenue	Hazardous waste history, Petroleum use
BP-022	Baltimore Car & Truck Rental, Inc.	200 North Warwick Avenue	Petroleum release
BP-023	G&M Oil Company, Inc.	1549 Warwick Avenue	Petroleum release
BP-024	Trans Realty, Inc.	2501 West Lexington Street	Petroleum use
BP-025	Franklin Fuel Express	2417 W Franklin Street	Petroleum use
BP-028	Blue Ridge Fuel Co.	1400 Moreland Avenue	Petroleum use
BP-029	Marco Shoe Company/Nelco Shoes	2415 West Franklin Street	Petroleum use
BP-030	Tedco Industries	2335 W Franklin Street	Petroleum use
BP-031	Kaufman Products	1330 North Bentalou Street	Petroleum use, Industrial history
BP-035	Jung, Youngok Ann	501 North Bentalou Street	Automotive history
BP-036	Exxon Station	2200 Edmondson Avenue	Petroleum use
BP-038	Alpha One, Inc.	2140 Edmondson Avenue	Petroleum release
BP-040	Emanuel Tire	2120 West Lafayette Avenue	Brownfields
BP-042	Carver Vocational Technical Senior High School	2201 Presstman Street	Petroleum use
BP-045	The Old Time Way Church of Deliverance	2104 West Lanvale Street	Coal history
BP-059	Stop Shop Save	1410 North Monroe Street	Automotive history
BP-062	Exxon Company	1542 North Monroe Street	Petroleum use

Site ID #	Property Description	Address	Hazard Type
BP-063	E. S. Brady & Co., Inc.	1310 North Monroe Street	Railway history
BP-064	Jolly's Food and Convenience Mart	1500 North Monroe Street	Automotive history
BP-066	Former Coliseum Building	2201 North Monroe Street	VCP action, Petroleum use
BP-067	BP Service Station	900 North Monroe Street	Petroleum release
BP-077	JJ Adams Fuel Oil Company	1810 Winchester Street	Petroleum use
BP-080	Watkins residence	2037 North Fulton Avenue	Petroleum release
BP-086	American Oil Co., Penn Square II	1655 Old Lane	Petroleum release
BP-099	George G. Ruppersberger & Sons, Inc.	2639 Pennsylvania Avenue	Petroleum release
BP-108	Part Terminal Station	2331 North Fulton Avenue	Petroleum release
BP-119	MTA Terminal	2471 Woodbrook Avenue	Petroleum use
BP-133	Greenwood Towing Inc./Auto Title Service Corp.	1370 West North Avenue	Petroleum use, Automotive history
BP-203	Norfolk Railway Yard (Hollin Yard)	340 West North Avenue	Petroleum use, railway history
BP-206	Baltimore City DPW Highway Maintenance Garage	560 West North Avenue	Petroleum use
BP-214	Amtrak/Jones Falls Substation	151 West Oliver Street	Petroleum release
BP-217	Baltimore Postal Service Vehicle Maintenance	60 West Oliver Street	Petroleum release
BP-219	Maryland Community Resource Center/Sterling Auto Radiator Works	1731 Maryland Avenue	Petroleum release
BP-221	Metro Laundry & Cleaners/La La Auto Repair Inc./Atlantic Auto Service	1700 North Charles Street	Dry-cleaning history, Petroleum use
BP-223	Vincent Gulf Service Station/Hess	1801 North Charles Street	Petroleum release

Hazards associated with the high priority sites include petroleum and railway contamination as well as industrial history, Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), and VCP sites. The majority of the sites have current or historical petroleum use and/or release.

Table VI-19: High Priority Hazardous Material Sites near the Preferred Alternative

Site ID #	Property Description	Address	Hazard Type
BP-037	ABEX Baltimore – ABC Rail Products Corp.	2200 Winchester Street	CERCLIS, Industrial history
BP-041	American Ice Company	2100 West Franklin Street	Brownfields assessment, Hazardous waste history
BP-050	Matrix Metals	2045 Winchester Street	VCP action, Petroleum use
BP-056	The Baltimore Asphalt Paving Co. (P. Flanigan & Sons, Inc., Pen Mar Company, Inc.)	1320 North Monroe Street	Petroleum use, Industrial history
BP-095	Penn Square Property	2632 Pennsylvania Avenue	VCP action, Petroleum release
BP-224	Amtrak Pennsylvania Station	1500 North Charles Street	Petroleum release, Railway history
BP-226	Norfolk Railway Yard	340 West North Avenue	Petroleum release, Railway history

b. Construction Impacts

Construction of the Preferred Alternative would include transporting and using construction-related hazardous materials and wastes, and could potentially result in accidental releases of hazardous material. Additionally, construction of the Preferred Alternative has the potential of mobilizing contaminants already present in the soil or groundwater. Exposure of the local population to groundwater pollutants is mitigated since the City of Baltimore conversion from water supply wells to a municipal supply system in the 1800s. Construction areas for the Project would have restricted access (fencing, gates, barriers, security guards, etc.) to help prevent accidental exposure.

Temporary Use and Storage of Hazardous Materials

Materials and chemicals brought to the project site to aid in the construction process could experience an uncontrolled release due to mishandling or an accident. Potential materials of concern include fuel sources for backup power generators, compressed gases used for welding and metal cutting, lead-acid batteries, fluorescent lamps containing mercury vapors, and polychlorinated biphenyls (PCBs) within transformer insulating oil. In some cases, the proposed action will require the use of potentially toxic products (e.g., herbicides, pesticides, rodenticides, lubricants, muck additives). Secondary hazardous materials (e.g. exhaust fumes) may be a greater health risk than the primary hazardous material (e.g., diesel fuel). The use of hazardous materials creates downstream potential to generate hazardous waste (e.g., tunnel muck, asbestos demolition material). Discussion of mitigation is included in the following sections.

Construction on or in Proximity to Sites of Concern

Based on the industrial history of properties within the Preferred Alternative's limit of disturbance, the mobilization of some impacted soil and groundwater during construction is anticipated. Phase II environmental site assessments are recommended for high and medium priority sites to further screen and characterize potential contaminant concentrations prior to mobilization for field activities. A total of 11 high, 24 medium, and 36 low-priority sites are identified for Phase II assessment under the Preferred Alternative. The sites identified are based on the potential risk of encountering contaminants during construction of the tunnel based on distance from the alignment, and type of contaminant (i.e. mobility, hazard, quantity released). All environmentally hazardous materials and contaminants encountered or mobilized during construction of the project will be investigated, handled, and mitigated in accordance with applicable Federal, state, and local laws and regulations.

Although the hazardous materials assessment focused on historical environmental releases in the vicinity of the Preferred Alternative, other sources of contamination or hazardous materials mobilized during construction of the project have the potential to impact the surrounding community or local environment. Remediated sites may also contain residual subsurface contamination that could be impacted by construction.

Figures VI-18, **VI-19**, **VI-20**, **and VI-21** depict the location of sites of concern identified for this FEIS in relation to the Preferred Alternative alignment.

Construction of the tunnel portals is anticipated to mobilize significant quantities of soil and groundwater. One high priority site (Amtrak Pennsylvania Station – BP-224), six medium priority sites (see **Table VI-18**) and nine low priority locations (see **Table VI-17**) are within 500 feet of the north portal (see **Figure VI-21**). Due to the industrial history of the site and surrounding area, potential contaminant concerns include petroleum constituents, corrosive waste, halogenated solvents, chlorinated solvents, cadmium, chromium, lead, mercury, and benzene.

Two high priority sites (The American Ice Company – BP-041 and Matrix Metals – BP-050), thirteen medium priority sites (see **Table VI-18**) and twelve low priority locations (see **Table VI-17)** are within 500 feet of the south portal (see **Figure VI-19**). Historical contaminant concerns underlying and surrounding the south portal area include arsenic, cadmium, chromium, mercury and other metals, benzene petroleum constituents, tetrachloroethylene and other chlorinated solvents, PAHs, ammonia and coal tar.

In addition to the potential contaminants identified above, tunnel construction activities are potential sources of hazardous materials, which include work in and around:

- Gas lines and other subsurface utility systems;
- Construction equipment fuel tanks;
- Compressed gas canisters for welding;
- Building demolition material including asbestos or lead-based paint; and
- Chemicals present in tunneling muck.

Local communities and the surrounding environment could be exposed to existing hazardous materials mobilized as waste material if present within the tunnel limits of disturbance. Mobilization could include vapors in the soil pore space mobilized due to tunnel pressurization, dust and solids mobilized during tunneling, excavation, transport and disposal, or groundwater impacted by the movement of hazardous materials or contaminants into the dissolved phase.

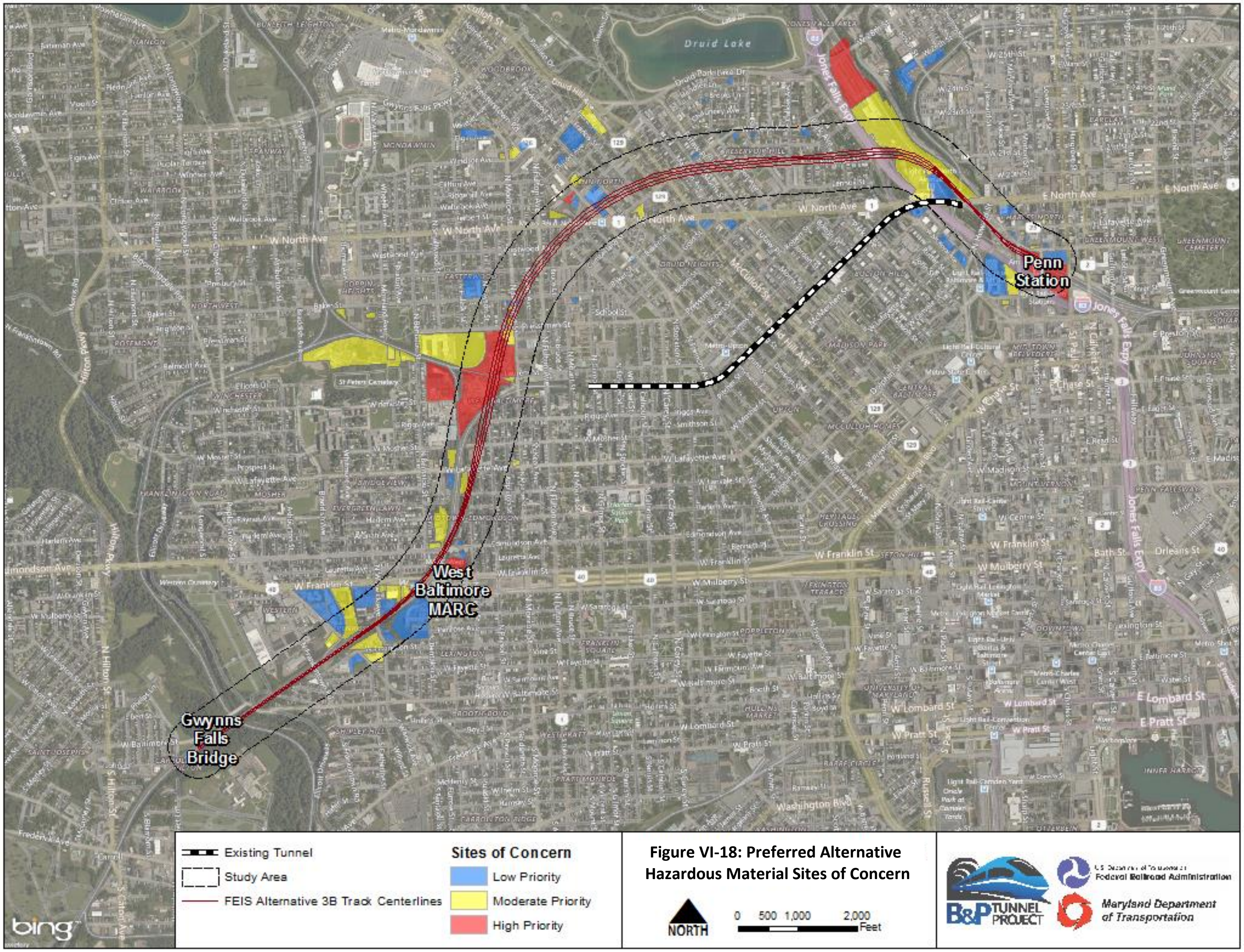

Figure VI-18: Preferred Alternative Hazardous Material Sites of Concern

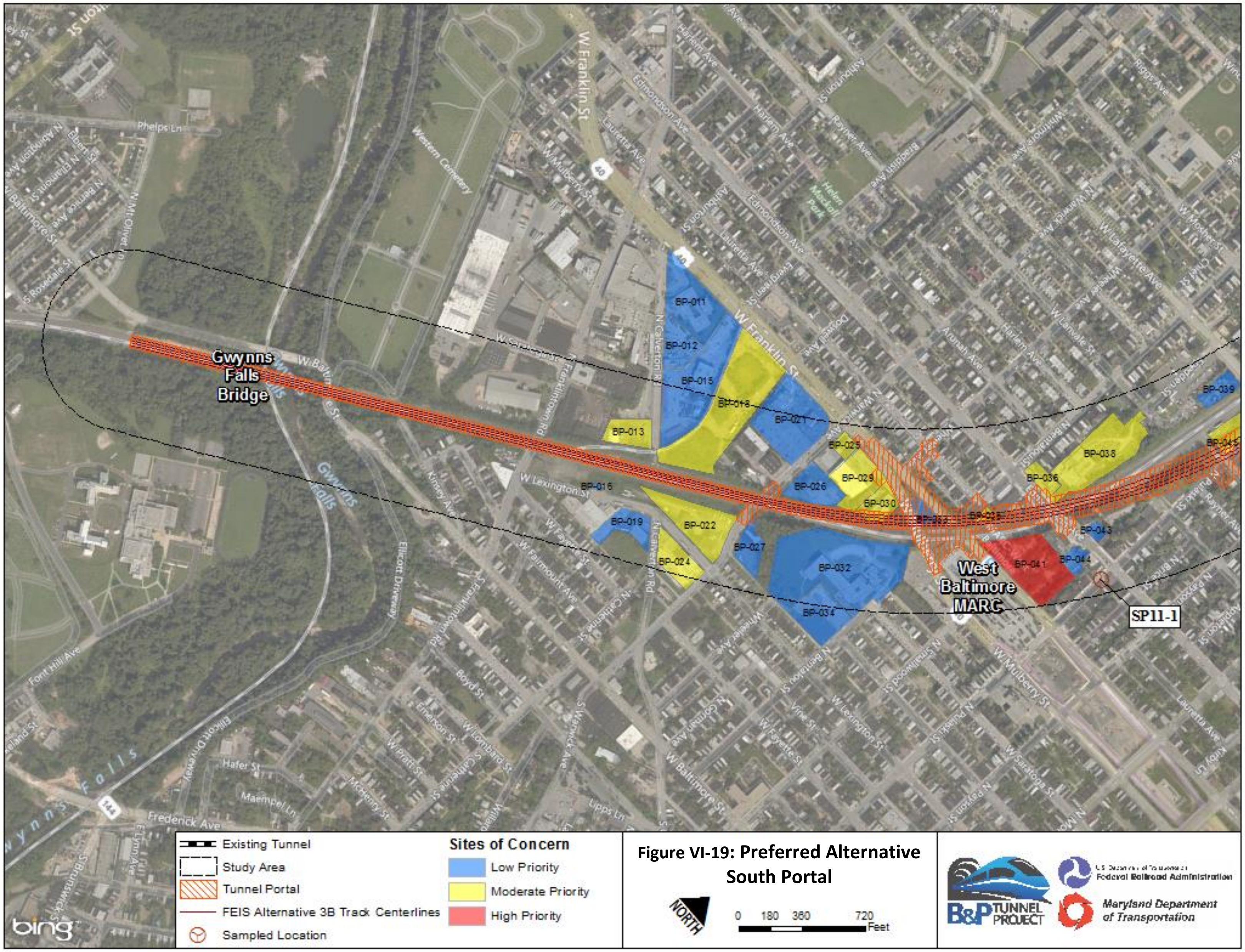

Figure VI-19: Preferred Alternative South Portal

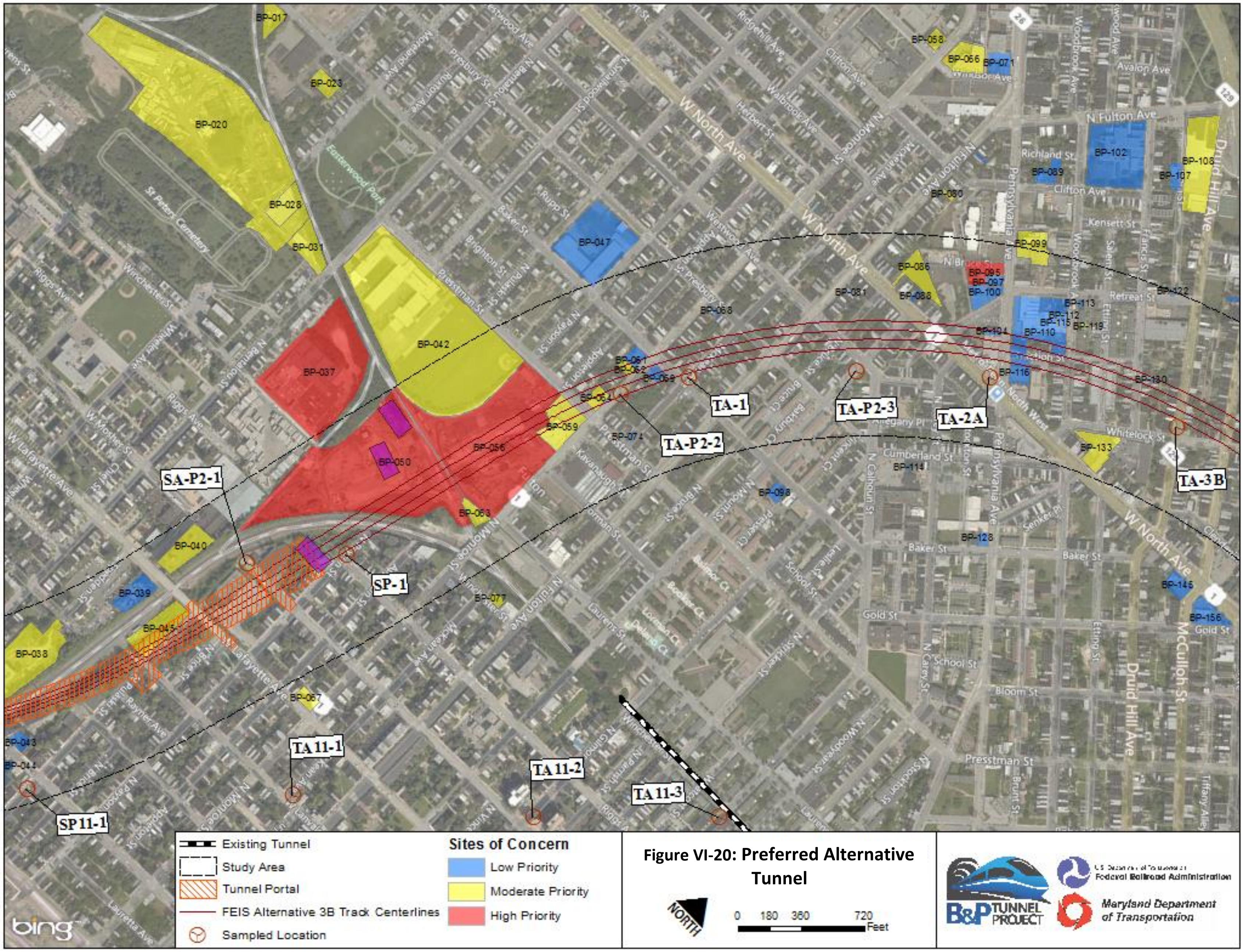

Figure VI-20: Preferred Alternative Tunnel

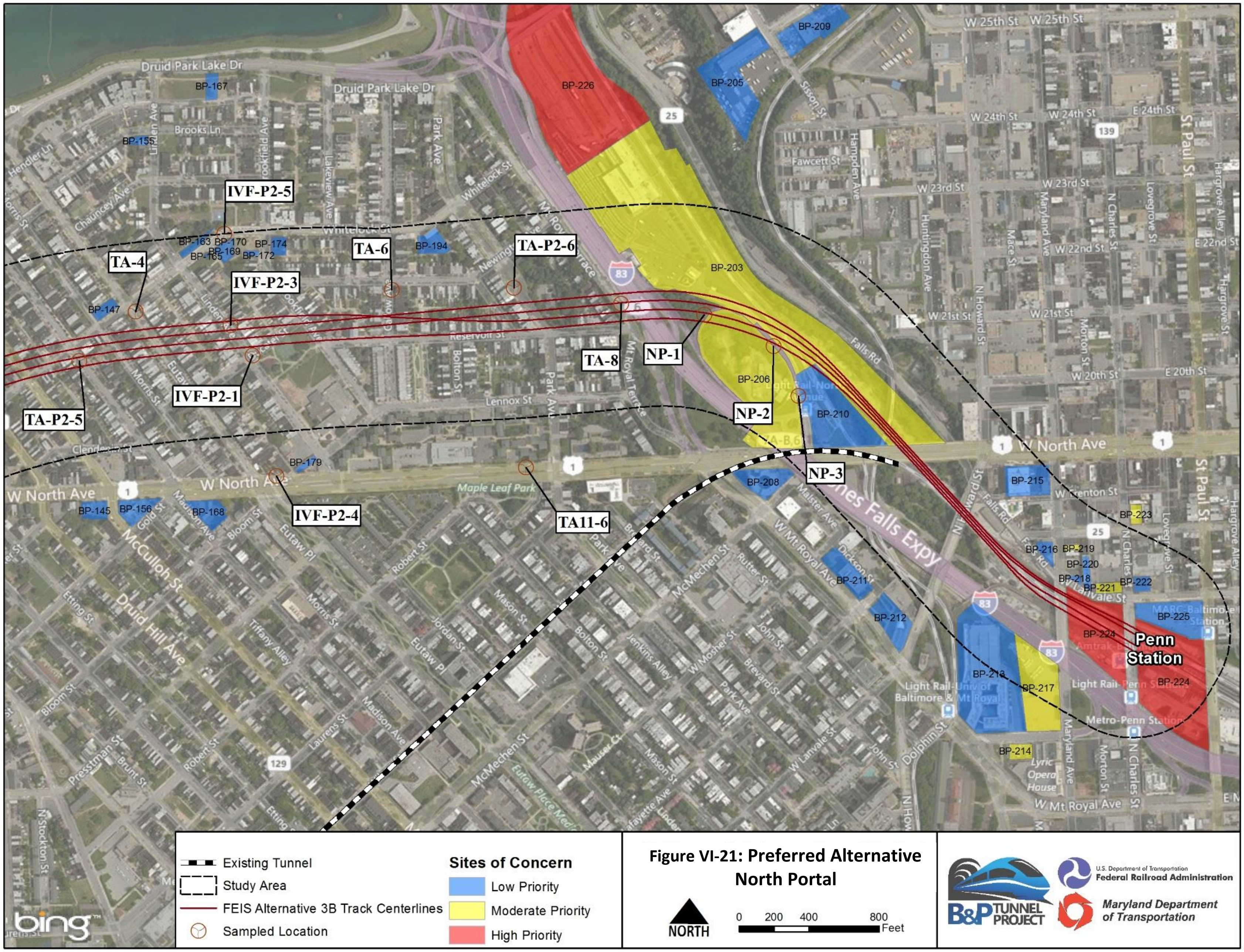

Figure VI-21: Preferred Alternative North Portal

3. Alternative 3A

There are 92 hazardous material sites, including residences, dry cleaners/laundromats, schools, automotive maintenance facilities, gas stations, fire stations, community resource centers, industrial properties, and railway yards within the Study Area of Alternative 3A. Of the 92 sites, 57 sites are low priority, 29 medium priority, and six high priority. A full list of hazardous materials sites identified for Alternative 3A is included in the DEIS.

Table VI-20, **Table VI-21**, and **Table VI-22** summarize the low, medium, and high priority sites, respectively, for Alternative 3A.

Table VI-20: Alternative 3A Low Priority Hazardous Material Sites

Site ID #	Property Description	Address	Hazard Type
BP-036	Exxon Station	2200 Edmondson Avenue	Petroleum release
BP-039	Apex Oil, Co.	1829 Baker Street	Petroleum release
Bp-043	LA Auto Service	2124 Edmondson Avenue	Petroleum use
BP-047	Matthew A. Henson Elementary School	2218 Reisterstown Road	Petroleum use
BP-048	Keen Leasing, Inc.	700 McKean Avenue	Petroleum release
BP-058	Cloverland Dairy	2200 North Monroe Street	Petroleum release
BP-061	One & One Carry Out	1827 North Fulton Avenue	Automotive history
BP-069	Sunoco Service Station	1568 Clifton Avenue	Automotive history
BP-071	Papa Auto Parts	2600 Madison Avenue	Petroleum release
BP-074	Perfect Cleaners	2335 North Fulton Avenue	Dry-cleaning history
BP-079	Steve Auto	2608 Pennsylvania Avenue	Petroleum release
BP-081	People's Valet Service, Inc.	2600 Pennsylvania Avenue	Dry-cleaning history
BP-088	Parham & Spriggs Laundry	2542 Pennsylvania Avenue	Dry-cleaning history
BP-089	F. A. Taylor	2634 Flora Street	Petroleum release
BP-093	Druid Hill Park	2565 Pennsylvania Avenue	Petroleum use
BP-097	Mel and Logan Auto	2468 Woodbrook Avenue	Automotive history
BP-098	Gilmore Homes, Baltimore Housing Authority	1800 Linden Avenue	Petroleum release
BP-100	National Auto Repair	2523 Pennsylvania Avenue	Automotive history
BP-102	Westside Elementary School	2480 Woodbrook Avenue	Petroleum release
BP-103	Gilmore Homes	401 West North Avenue	Petroleum use
BP-104	Colonial Launderers	1415 Retreat Street	Dry-cleaning history
BP-107	Whitelock Towing	2562 McCulloh Street	Petroleum release
BP-110	Fish Rental Services	2427 Francis Street	Petroleum use, Dry-cleaning history
BP-112	Wareheim's Garage	2560 Madison Avenue	Automotive history
BP-113	Baltimore Transit Co. – Retreat Street Repair Shop	1511 Retreat Street	Automotive history, Railway history
BP-114	residence	1341 Dickson Street	Petroleum release
BP-115	Former auto service facility (Theo Messersmith)	1006 Whitelock Street	Automotive history
BP-116	CVS Pharmacy	2520 Linden Avenue	hazardous waste history
BP-122	H&B Manufacturing Co., Inc.	827 Druid Park Lake Drive	Automotive history
BP-128	City of Baltimore	80 West Oliver Street	Petroleum release
BP-129	Dix residence	1001 West North Avenue	Petroleum release

Site ID #	Property Description	Address	Hazard Type
BP-130	residence	919 Whitelock Street	Petroleum use
BP-134	Accent Displays, Inc.	2270 Brookfield Avenue	Petroleum release
BP-144	Modern Junk & Salvage Co.	2109 West Lafayette Avenue	industrial history
BP-145	Exxon #22758	1201 West North Avenue	Petroleum release
BP-147	Former auto service facility (Jason Litchfield)	841 Whitelock Street	Automotive history
BP-155	Penrose property	701 Whitelock Street	Petroleum release
BP-156	Amoco Station	1600 North Payson Street	Petroleum release
BP-163	Wonder Cleaners & Tailors	954 Whitelock Street	Dry-cleaning history
BP-165	Lee, Sun F	925 Whitelock Street	Dry-cleaning history
BP-167	Housing & Urban Development	410 West North Avenue	Petroleum release
BP-168	Crown Station (Quest Station)	113 West North Avenue	Petroleum use
BP-169	Former Cove One Hour Cleaners	1734 Maryland Avenue	Dry-cleaning history
BP-170	Snow White Self Service Laundry	915 Whitelock Street	Dry-cleaning history
BP-172	Fish Dry Cleaning & Laundry Co.	1800 Linden Avenue	Dry-cleaning history
BP-174	VI Contracting Site	401 West North Avenue	Petroleum release
BP-179	Minor's Cleaners	1900 Elgin Avenue	Dry-cleaning history
BP-194	Tune Up City, Inc.	1341 Dickson Street	Automotive history
BP-205	Sisson Realty Company/Sun Cab	2600 Sisson Street	Petroleum release
BP-208	Baltimore Fire Department, Aerial Tower 111	1410 North Monroe Street	Petroleum use
BP-209	Southern Fuel Company	401 West 26th Street	Petroleum release
BP-210	Lincoln Motor	80 West Oliver Street	Automotive history
BP-211	AAA Mid-Atlantic Inc.	1401 West Mount Royal Avenue	Petroleum use
BP-212	Maryland Institute College of Art - Fox Building	1550 North Monroe Street	Petroleum use
BP-213	Bolton Yard	1500 North Monroe Street	VCP action
BP-215	Maryland Institute College of Art	2109 West Lafayette Avenue	Petroleum release
BP-216	Maryland Community Resource Center	1600 North Payson Street	Petroleum release
BP-218	Penn Esso Station	1716 Maryland Avenue	Automotive history
BP-220	Atlantic Automobile Repairs	6 West Lanvale Street	Automotive history
BP-222	Binswanger, Sylvan W	2 East Lanvale Street	Automotive history
BP-225	National Auto Radiator and Fender Company Inc.	9 East Lanvale Street	Automotive history

Hazards associated with the low priority sites include: Petroleum, automotive, dry-cleaning, railway contamination, and "hazardous materials" as well as industrial history and a VCP site. Over half of the sites have current or historical petroleum use and/or releases.

Table VI-21: Alternative 3A Medium Priority Hazardous Material Sites

Site ID #	Property Description	Address	Hazard Type
BP-017	Can-Do Fuel Oil Company, Inc.	2527 Baker Street	Petroleum contamination
BP-020	Emanuel Tire, LLC	1300 Moreland Avenue	Hazardous materials
BP-023	G&M Oil Company, Inc.	1549 Warwick Avenue	Petroleum release
BP-028	Blue Ridge Fuel Co.	1400 Moreland Avenue	Petroleum use
BP-031	Kaufman Products	1330 North Bentalou Street	Petroleum use, Industrial history
BP-038	Alpha One, Inc.	2140 Edmondson Avenue	Petroleum release
BP-040	Emanuel Tire	2120 West Lafayette Avenue	Brownfields
BP-042	Carver Vocational Technical Senior High School	2201 Presstman Street	Petroleum use
BP-045	The Old Time Way Church of Deliverance	2104 West Lanvale Street	Coal history
BP-059	Stop Shop Save	1410 N Monroe Street	Petroleum use
BP-062	Exxon Company	1542 North Monroe Street	Petroleum use
BP-063	E. S. Brady & Co., Inc.	1310 North Monroe Street	Railway history
BP-064	Jolly's Food and Convenience Mart	1704 West North Avenue	Automotive history
BP-066	Former Coliseum Building	2201 North Monroe Street	VCP action, Petroleum use
BP-068	Kim property	1655 North Monroe Street	Petroleum release
BP-077	JJ Adams Fuel Oil Company	1810 Winchester Street	Petroleum use
BP-080	Watkins residence	2037 North Fulton Avenue	Petroleum release
BP-086	American Oil Co., Penn Square II	1655 Old Lane	Petroleum release
BP-099	George G. Ruppersberger & Sons, Inc.	2639 Pennsylvania Avenue	Petroleum release
BP-108	Part Terminal Station	2331 North Fulton Avenue	Petroleum release
BP-119	MTA Terminal	2471 Woodbrook Avenue	Petroleum use
BP-133	Greenwood Towing Inc./Auto Title Service Corp.	1370 West North Avenue	Petroleum use, Automotive history
BP-203	MTA Light Rail Maintenance Facility	344 West North Avenue	Petroleum use, Railway history
BP-206	Baltimore City DPW Highway Maintenance Garage	560 West North Avenue	Petroleum use
BP-214	Amtrak/Jones Falls Substation	151 West Oliver Street	Petroleum release
BP-217	Baltimore Postal Service Vehicle Maintenance	60 West Oliver Street	Petroleum release
BP-219	Maryland Community Resource Center/Sterling Auto Radiator Works	1731 Maryland Avenue	Petroleum release
BP-221	Metro Laundry & Cleaners/La La Auto Repair Inc./Atlantic Auto Service	1700 North Charles Street	Dry-cleaning history, Petroleum use
BP-223	Vincent Gulf Service Station/Hess	1801 North Charles Street	Petroleum release

Hazards associated with the medium priority sites include: Petroleum, automotive, dry-cleaning, railway contamination, and "hazardous materials" as well as industrial history and coal use, Brownfields, and a VCP site. The majority of sites have current or historical petroleum use and/or release.

Table VI-22: Alternative 3A High Priority Hazardous Material Sites

Site ID #	Property Description	Address	Hazard Type
BP-037	ABEX Baltimore – ABC Rail Products Corp.	2200 Winchester Street	CERCLIS[1] screening, Industrial history
BP-050	Matrix Metals	2045 Winchester Street	VCP action, Petroleum use
BP-056	The Baltimore Asphalt Paving Co. (P. Flanigan & Sons, Inc., Pen Mar Company, Inc.)	1320 North Monroe Street	Petroleum use, Industrial history
BP-095	Penn Square Property	2632 Pennsylvania Avenue	VCP action, Petroleum release
BP-224	Amtrak Pennsylvania Station	1500 North Charles Street	Petroleum release, Railway history
BP-226	Norfolk Railway Yard	340 West North Avenue	Petroleum release, Railway history

Hazards associated with the high priority sites include: Petroleum and railway contamination, as well as CERCLIS, industrial history, and VCP sites. The majority of sites have current or historical petroleum use and/or release.

4. Alternative 3C

There are 153 hazardous material sites, including residences, dry cleaners/laundromats, schools, automotive maintenance facilities, gas stations, fire stations, community resource centers, industrial properties, and railway yards within the Study Area of Alternative 3C. Of the 153 sites, 92 sites are low priority, 52 sites medium priority, and nine sites high priority. **Table VI-23**, **Table VI-24**, and **Table VI-25** summarize the low, medium, and high priority sites, respectively for Alternative 3C.

Table VI-23: Alternative 3C Low Priority Hazardous Material Sites

Site ID #	Property Description	Address	Hazard Type
BP-002	Southwestern Senior High School	200 Font Hill Avenue	Petroleum use
BP-003	Mount Nebo Church	240 North Franklintown Road	Petroleum release
BP-004	Franklintown Road Assoc./The Service Composition Company Inc.	232 North Franklintown Road	Petroleum use
BP-007	Supervisor of Elections	301 North Franklintown Road	**Petroleum use**
BP-008	Baltimore City Water Meter Shop	200 North Franklintown Road	**Petroleum use**
BP-009	Maryland Food Bank	241 North Franklintown Road	**Petroleum use**
BP-011	Baltimore Pre-Release Unit	301 North Calverton Road	Petroleum use
BP-012	Baltimore Substation	239 North Calverton Road	Petroleum release
BP-014	Zimmer Development Company	2600 West Franklin Street	**Petroleum use**

Site ID #	Property Description	Address	Hazard Type
BP-015	City of Baltimore Franklin Street Yard	231 North Calverton Road	Petroleum release
BP-016	Lexington Auto Service/Motor Pool West	2560 West Lexington Street	Automotive and Hazardous waste history
BP-019	Baltimore Uniform Rental, Inc.	2555 West Lexington Street	Petroleum use, Dry-cleaning history
BP-021	Former Acme Pad Factory	330 North Warwick Avenue	Petroleum release
BP-026	Unknown site	311 North Warwick Avenue	Petroleum release
BP-027	Cosmechem	215 North Warwick Avenue	Hazardous waste history
BP-032	Bentalou Elementary School	220 North Bentalou Street	Petroleum release
BP-034	Victor Graphics	200 North Bentalou Street	Petroleum release
BP-043	LA Auto Service	2124 Edmondson Avenue	Automotive history
BP-044	McDowell's Auto Service	2135 Edmondson Avenue	Automotive history
BP-046	C & P Telephone	2010 Windsor Avenue	**Petroleum use**
BP-047	Matthew A. Henson Elementary School	1600 North Payson Street	Petroleum use
BP-048	Keen Leasing, Inc.	1900 Elgin Avenue	Petroleum release
BP-051	How-Nor Partnership/Baltimore Design Center	2000 West North Avenue	**Petroleum release**
BP-060	Fingles Metalworks Inc.	2256 Reisterstown Road	**Hazardous waste history**
BP-061	One & One Carry Out	1550 North Monroe Street	Automotive history
BP-062	Exxon Company	1542 North Monroe Street	Petroleum use
BP-065	Dulany-Varney Inc.	2250 Reisterstown Road	**Hazardous waste history**
BP-068	Kim property	1655 North Monroe Street	Petroleum release
BP-069	Sunoco Service Station	1829 Baker Street	Automotive history
BP-071	Papa Auto Parts	2218 Reisterstown Road	Petroleum release
BP-081	People's Valet Service, Inc.	1827 North Fulton Avenue	Dry-cleaning history
BP-082	Orange Cleaners	1740 West North Avenue	Dry-cleaning history
BP-083	Druid Hill Park Conservatory	3100 Swann Drive	**Petroleum release**
BP-084	Eurco One Hour Cleaners	2214 North Fulton Avenue	Dry-cleaning and Hazardous waste history
BP-087	Eagle Dyeing & Dry Cleaning Company	2658 Pennsylvania Avenue	Dry-cleaning history
BP-088	Parham & Spriggs Laundry	1704 West North Avenue	Dry-cleaning history
BP-092	Christy Motor Company	2634 Pennsylvania Avenue	Automotive history
BP-093	Druid Hill Park	2600 Madison Avenue	Petroleum use
BP-096	Hop, Lee	2249 North Fulton Avenue	Dry-cleaning history
BP-097	Mel and Logan Auto	2608 Pennsylvania Avenue	Automotive history
BP-100	National Auto Repair	2600 Pennsylvania Avenue	Automotive history
BP-101	Whiteley, George S	2550 Woodbrook Avenue	Automotive history
BP-104	Colonial Launderers	2542 Pennsylvania Avenue	Dry-cleaning history

Site ID #	Property Description	Address	Hazard Type
BP-110	Fish Rental Services	2565 Pennsylvania Avenue	Petroleum use, Dry-cleaning history
BP-111	Baltimore City	2565 Francis Street	**Petroleum use**
BP-112	Wareheim's Garage	2480 Woodbrook Avenue	Automotive history
BP-113	Baltimore Transit Co. – Retreat Street Repair Shop	1511 Retreat Street	Automotive history, Railway history
BP-115	Former auto service facility (Theo Messersmith)	2468 Woodbrook Avenue	Automotive history
BP-116	CVS Pharmacy	2523 Pennsylvania Avenue	Hazardous waste history
BP-121	L & J Cleaners	2501 Francis Street	Dry-cleaning history
BP-122	H&B Manufacturing Co., Inc.	1415 Retreat Street	Automotive history
BP-126	Sisa Enterprises	2580 McCulloh Street	**industrial history**
BP-127	Druid Park Motors Inc.	2509 Druid Hill Avenue	Automotive history
BP-131	H M Auto Service/Daw's Body & Fender Repair Shop	2493 Druid Hill Avenue	Automotive history
BP-133	Greenwood Towing Inc./Auto Title Service Corp.	1370 West North Avenue	Petroleum use, Automotive history
BP-135	Temple Gardens Apartments	2601 Madison Avenue	**Petroleum use**
BP-137	Emersonian Apartments	2502 Eutaw Place	**Petroleum use**
BP-141	Esplanade Apartments	2525 Eutaw Place	**Petroleum use**
BP-142	Feeser-Murphy property	2511 Eutaw Place	**Petroleum use**
BP-147	Former auto service facility (Jason Litchfield)	1006 Whitelock Street	Automotive history
BP-153	Penrose property	901 Druid Park Lake Drive	Petroleum use
BP-155	Penrose property	2520 Linden Avenue	Petroleum release
BP-158	Adolohla Garage	2415 Linden Avenue	Automotive history
BP-160	unknown	2411 Linden Avenue	**Petroleum release**
BP-161	Baltimore City	2423 Linden Avenue	Automotive history
BP-163	Wonder Cleaners & Tailors	954 Whitelock Street	Dry-cleaning history
BP-165	Lee, Sun F	925 Whitelock Street	Dry-cleaning history
BP-167	Housing & Urban Development	827 Druid Park Lake Drive	Petroleum release
BP-169	Former Cove One Hour Cleaners	919 Whitelock Street	Dry-cleaning history
BP-170	Snow White Self Service Laundry	915 Whitelock Street	Dry-cleaning history
BP-172	Fish Dry Cleaning & Laundry Co.	2270 Brookfield Avenue	Dry-cleaning history
BP-175	Lakeview Tower Extension	737 Druid Park Lake Drive	**Petroleum use**
BP-180	Housing and Urban Development	735 Druid Park Lake Drive	**Petroleum use**
BP-189	Lakeview Tower	717 Druid Park Lake Drive	**Petroleum use**
BP-192	Beres, Michael	705 Whitelock Street	Dry-cleaning history
BP-193	White Park Apartments	2220 Park Avenue	**Petroleum use**
BP-205	Sisson Realty Company/Sun Cab	2600 Sisson Street	Petroleum release
BP-208	Baltimore Fire Department, Aerial Tower 111	401 West North Avenue	Petroleum use
BP-209	Southern Fuel Company	401 West 26th Street	Petroleum release
BP-210	Lincoln Motor	410 West North Avenue	Automotive history

Site ID #	Property Description	Address	Hazard Type
BP-211	AAA Mid-Atlantic Inc.	1401 West Mount Royal Avenue	Petroleum use
BP-212	Maryland Institute College of Art - Fox Building	1341 Dickson Street	Petroleum use
BP-213	Bolton Yard	80 West Oliver Street	VCP action
BP-215	Maryland Institute College of Art	113 West North Avenue	Petroleum release
BP-216	Maryland Community Resource Center	1734 Maryland Avenue	Petroleum release
BP-218	Penn Esso Station	1716 Maryland Avenue	Automotive history
BP-220	Atlantic Automobile Repairs	6 West Lanvale Street	Automotive history
BP-222	Binswanger, Sylvan W	2 East Lanvale Street	Automotive history
BP-225	National Auto Radiator and Fender Company Inc.	9 East Lanvale Street	Automotive history

Hazards associated with the low priority sites include: Petroleum, automotive, dry-cleaning, railway contamination, and “hazardous waste” as well as industrial history and a VCP site. Half of the sites have current or historical petroleum use and/or release.

Table VI-24: Alternative 3C Medium Priority Hazardous Material Sites

Site ID #	Property Description	Address	Hazard Type
BP-005	H & S Bakery Company/A & P Bakery	230 North Franklintown Road	Petroleum use
BP-006	Harowitz property	222 North Franklintown Road	Petroleum release
BP-010	Jesus Collision Center/Cooks Tank Line	110 North Franklintown Road	Petroleum release
BP-013	L & J Processing Facility	222 North Calverton Road	Hazardous waste history
BP-017	Can-Do Fuel Oil Company, Inc.	2527 Baker Street	Petroleum contamination
BP-018	Maryland Lumber Co.	2601 West Franklin Street	Petroleum release
BP-020	Emanuel Tire, LLC	1300 Moreland Avenue	Hazardous waste history
BP-022	Baltimore Car & Truck Rental, Inc.	200 North Warwick Avenue	Petroleum release
BP-023	G&M Oil Company, Inc.	1549 North Warwick Avenue	Petroleum release
BP-024	Trans Realty, Inc.	2501 West Lexington Street	Petroleum use
BP-025	Franklin Fuel Express	2417 W Franklin Street	Petroleum use
BP-028	Blue Ridge Fuel Co.	1400 Moreland Avenue	Petroleum use
BP-029	Marco Shoe Company/Nelco Shoes	2415 West Franklin Street	Petroleum use
BP-030	Tedco Industries	2335 West Franklin Street	Petroleum use
BP-031	Kaufman Products	1330 North Bentalou Street	Petroleum use, industrial history
BP-033	Baltimore City	2305 West Franklin Street	Automotive history
BP-035	Jung, Youngok Ann	501 North Bentalou Street	Automotive history

Site ID #	Property Description	Address	Hazard Type
BP-036	Exxon Station	2200 Edmondson Avenue	Petroleum use, Automotive history, Dry-cleaning history
BP-038	Alpha One, Inc.	2140 Edmondson Avenue	Petroleum release
BP-039	Apex Oil, Co.	2109 West Lafayette Avenue	Petroleum release
BP-040	Emanuel Tire	2120 West Lafayette Avenue	Brownfields assessment
BP-041	American Ice Company	2100 W Franklin Street	Petroleum use
BP-042	Carver Vocational Technical Senior High School	2201 Presstman Street	Petroleum use
BP-045	National Railroad	2104 West Lanvale Street	Coal-use history
BP-058	Cloverland Dairy	2200 North Monroe Street	Petroleum contamination
BP-059	Stop Shop Save	1410 North Monroe Street	Automotive history
BP-063	E. S. Brady & Co., Inc.	1310 North Monroe Street	Railway history
BP-064	Jolly's Food and Convenience Mart	1500 North Monroe Street	Automotive history
BP-066	Former Coliseum Building	2201 North Monroe Street	VCP action, Petroleum use
BP-067	BP Service Station	900 North Monroe Street	Petroleum release
BP-070	Green, Jeffrey E	1814 McKean Avenue	**Automotive, Industrial history**
BP-077	JJ Adams Fuel Oil Company	1810 Winchester Street	Petroleum use
BP-079	Steve Auto	2115 North Fulton Avenue	Petroleum release
BP-085	Penn North Partners LLLP	2632 Pennsylvania Avenue	Dry-cleaning history
BP-086	American Oil Co., Penn Square II	1655 Old Lane	Petroleum release
BP-089	F. A. Taylor	1568 Clifton Avenue	Petroleum release
BP-099	George G. Ruppersberger & Sons, Inc.	2639 Pennsylvania Avenue	Petroleum release
BP-102	Westside Elementary School	2335 North Fulton Avenue	Petroleum release
BP-107	Whitelock Towing	2634 Flora Street	Petroleum release
BP-119	MTA Terminal	2471 Woodbrook Avenue	Petroleum use
BP-125	Baltimore City	2513 Druid Hill Avenue	**Automotive, painting history**
BP-129	Dix residence	2562 McCulloh Street	Petroleum release
BP-134	Accent Displays, Inc.	2560 Madison Avenue	Petroleum release
BP-174	VI Contracting Site	841 Whitelock Street	Petroleum release
BP-194	Tune Up City, Inc.	701 Whitelock Street	Automotive history
BP-203	MTA Light Rail Maintenance Facility	344 West North Avenue	Petroleum use, railway history
BP-206	Baltimore City DPW Highway Maintenance Garage	560 West North Avenue	Petroleum use
BP-214	Amtrak/Jones Falls Substation	151 West Oliver Street	Petroleum release
BP-217	Baltimore Postal Service Vehicle Maintenance	60 West Oliver Street	Petroleum release

Site ID #	Property Description	Address	Hazard Type
BP-219	Maryland Community Resource Center/Sterling Auto Radiator Works	1731 Maryland Avenue	Petroleum release
BP-221	Metro Laundry & Cleaners/La La Auto Repair Inc./Atlantic Auto Service	1700 North Charles Street	Dry-cleaning history, Petroleum use
BP-223	Vincent Gulf Service Station/Hess	1801 North Charles Street	Petroleum release

Hazards associated with the medium priority sites include: Petroleum, automotive, dry-cleaning, railway contamination, and "hazardous waste" as well as industrial history and coal use, Brownfields, and VCP sites. Half of the sites have current or historical petroleum use and/or release.

Table VI-25: Alternative 3C High Priority Hazardous Material Sites

Site ID #	Property Description	Address	Hazard Type
BP-001	Potts and Callahan Quarry	2902 West Baltimore Street	**VCP action**
BP-037	ABEX Baltimore – ABC Rail Products Corp.	2200 Winchester Street	CERCLIS screening, industrial history
BP-050	Matrix Metals	2045 Winchester Street	VCP action, Petroleum use
BP-056	The Baltimore Asphalt Paving Co. (P. Flanigan & Sons, Inc., Pen Mar Company, Inc.)	1320 North Monroe Street	Petroleum use, industrial history
BP-080	Watkins residence	2037 North Fulton Avenue	Petroleum release
BP-095	Penn Square Property	2632 Pennsylvania Avenue	VCP action, Petroleum release
BP-108	Part Terminal Station	2331 North Fulton Avenue	Petroleum release
BP-224	Amtrak Pennsylvania Station	1500 North Charles Street	Petroleum release, railway history
BP-226	Norfolk Railway Yard	340 West North Avenue	Petroleum release, railway history

Hazards associated with the high priority sites include: Petroleum and railway contamination as well as industrial history, CERCLIS, and VCP sites. The majority of the sites have current or historical petroleum use and/or release.

5. Mitigation

The Project includes the following mitigation measures that correspond with potential impacts related to hazardous materials. Although the following measures correspond with the Preferred Alternative, similar measures would be appropriate to mitigate impacts of Alternative 3A and Alternative 3C.

Mitigation measures will be needed where construction encounters contaminated soil and/or groundwater. Excavated soil will be sampled, treated, and/or disposed of in accordance with Federal, state, and local regulations. If other contaminants, such as metals, are detected above MDE non-residential screening levels, soil and/or groundwater will be handled in accordance with applicable laws and regulations and disposed of at an MDE-approved treatment and/or disposal facility. Any hazardous wastes will be transported by a licensed/certified hazardous waste transporter. Measures will need to be taken to contain excavated soil onsite and avoid offsite migration. The general public, unless a work site allows unrestricted access, is typically shielded from hazardous materials and hazardous wastes that are components of site work.

The following mitigation measures are included in the Preferred Alternative:

- Development and implementation of a Hazardous Spill Prevention Plan and a Hazardous Materials Remediation Plan.

- Creation of a Soil Screening and Impacted Materials Handling Plan for the excavation, segregation, transportation and disposal of potentially impacted soils, as well as dewatering of potentially impacted groundwater. The plan would also include personal protective equipment (PPE), dust control, and safety requirements for workers who may be exposed to impacted soils. If contaminated soils or groundwater are identified or encountered during excavation or mobilization activities, additional mitigation strategies may be applicable. Heightened protective measures will be implemented to safeguard onsite personnel, the public and the environment from excavated or disturbed contaminated soil or groundwater. Such measures will include, but are not limited to, appropriate PPE, water and soil containment and/or treatment, dust control and suppression activities and dust monitoring. MDE will be consulted to determine the proper mitigation response and reporting requirements should a release of hazardous materials occur during operations.

- Inclusion of a qualified environmental professional to implement a screening and monitoring program. Screening and monitoring will be for the identification and segregation of impacted materials onsite for additional testing or immediate offsite disposal using a photoionization detector (PID) and visual and/or olfactory evidence. The monitoring program will include measures for preventing further distribution of potentially contaminated materials to other areas of the worksite or offsite through the implementation of segregated materials berms, plastic sheeting, or other applicable methods.

- Evaluation of any screening and sampling results by an environmental professional to determine health and safety, material handling, and off-site disposal requirements for impacted soils.

The investigation, handling, storage and disposal of all hazardous and contaminated materials will occur in accordance with applicable Federal, state, and local regulations and requirements. Project specific material handling, health and safety and emergency response plans will minimize risks. Additional targeted hazardous materials investigations may be conducted to further delineate and characterize potential contaminant concerns in the vicinity of the Preferred Alternative.

G. Solid Waste

1. Alternative 1: No-Build

Alternative 1: No-Build would not generate additional solid waste.

2. Preferred Alternative

The Preferred Alternative would generate large quantities of material. One source is chunks of concrete and pavement rubble from street and sidewalk destruction. An additional source would be building demolition materials from displaced residential and commercial properties. Another source would be soil and rock excavation, which may be suitable for reuse as backfill (which would comply with the directives of the *Zero Waste Plan for Maryland* (Executive Order 01.01.2015.01).

Because the Preferred Alternative involves boring a new underground tunnel it would generate solid waste, specifically excavated earthen material. The total amount of soil and rock to be excavated for the B&P Tunnel project is about 47 million cubic feet (1.8 million cubic yards) of material. About 78 percent of that volume is from the four running tunnels excavated by Tunnel Boring Machine. The balance comes from the shafts, cross passages, cut sections, cut and cover sections, as well as ventilation plenum tunnels and evacuation tunnels. Once excavated from its natural state, the volume increases. The project will need to dispose of some 70 million cubic feet (2.7 million cubic yards) of material. The site preparation phases may also involve the removal of additional amounts of excavated material. Building material resulting from demolition of buildings would also be generated. Any solid waste including construction, demolition and land clearing debris generated from the project must be properly disposed of at a permitted solid waste acceptance facility.

During construction, the Preferred Alternative would generate a small volume of waste such as product packaging, broken equipment, and site litter. Lingering construction waste would also amass once main construction activity commences; this includes building materials such as metal, wood, and concrete. A minimal amount of solid waste would also be generated by general construction worker activities and would include food or paper trash, cardboard, aluminum, plastic, etc.

Some of the excavated earth material will be suitable for backfill for the newly created tunnel. Minor hydraulic fluid, motor oil, and fuel spills could require the disposal of contaminated soil, spill clean-up kits would be kept on-site at all times. Contaminated solid waste will be collected and disposed of appropriately in accordance with Maryland and Baltimore City regulations.

3. Alternative 3A

Alternative 3A would not differ substantially from the Preferred Alternative as described above regarding solid waste.

4. Alternative 3C

Alternative 3C would not differ substantially from the Preferred Alternative as described above regarding solid waste.

5. Mitigation

An adequate staging area would be identified for each major excavation that includes consideration for spoil operations. The construction contract specifications would include requirements for a Materials Handling and Disposal Plan that describes how the spoil will be handled, stored, hauled, and disposed. Disposal sites should be identified for inclusion in the construction bid documents.

All excavated materials requiring off-site disposal would be handled and disposed of in accordance with applicable regulations. The re-use of some earthen material as fill and the status of land fill capacity being at an acceptable level to handle the increase mean disposal of generated solid waste by the B&P Tunnel Project should be manageable.

H. Air Quality

This section presents information on air quality impacts resulting from general operations and construction of the Preferred Alternative, Alternative 3A, and Alternative 3C in comparison to the No-Build Alternative. The build alternatives (Preferred Alternative, Alternative 3A, and Alternative 3C) would not differ substantially in air quality effects, therefore the analyses in this section is applicable to each of the three build alternatives. More information is available in the *B&P Tunnel FEIS Air Quality Technical Report,* published on the Project website.

1. Operational Emissions Analysis

Generalized air quality effects due to operations are presented here for the Preferred Alternative, Alternative 3A, and Alternative 3C. The tunnel operations data for the No-Build year 2040 (Alternative 1) and Build year 2040 (build alternatives) are summarized in **Table VI-26** and **Table VI-27**, respectively. Although the number of Amtrak operations increases with the Build Year, the Acela, Northeast Regional, and Metropolitan trains are powered by electric locomotives which do not directly generate significant air emissions. Regardless of whether the Preferred Alternative or another alternative is implemented, the regional MARC commuter train service plans to replace all existing electric locomotives with diesel-powered locomotives by 2019 (MTA, 2013), as well as doubling operations in 2040. The assumed conversion of MARC trains from electric to diesel is included in the operating characteristics presented in **Table VI-26** and **Table VI-27**.

Table VI-26: Tunnel Operating Characteristics in the No-Build Alternative (2040)

Train Service	Locomotive Type	Total Bi-directional Frequencies		Consist Data		Speed N/S* (mph)
		Daily	Peak Hour	# of Locos	# of Cars	
MARC (Regional)	Diesel	82	7	1	8	30/30
Acela (Intercity Express)	Electric	58	4	N/A	14	30/30
NE Regional (Intercity Corridor)	Electric	52	3	1	8	30/30
Metropolitan	Electric	0	0	N/A	N/A	30/30
Freight	Diesel	2	0	1	30	30/30
Total	**All**	**194**	**14**			

*Note: Average train speed entering and exiting the north portal (N) and south portal (S).
Source: Federal Railroad Administration NEC FUTURE Project, Tier I EIS Alternatives (Alternative 1).

Table VI-27: Tunnel Operating Characteristics for the Build Alternatives (2040)

Train Service	Locomotive Type	Total Bi-directional Frequencies		Consist Data		Speed N/S* (mph)
		Daily	Peak Hour	# of Locos	# of Cars	
MARC (Regional)	Diesel	164	15	1	8	30/70
Acela (Intercity Express)	Electric	82	8	N/A	14	30/70
NE Regional (Intercity Corridor)	Electric	48	4	1	8	30/70
Metropolitan	Electric	92	8	N/A	14	30/70
Freight	Diesel	2	0	1	30	30/70
Total	**All**	**388**	**35**			

*Note: Average train speed entering and exiting the north portal (N) and south portal (S).
Source: NEC FUTURE Project (USDOT, Accessed September 8, 2014).

Table VI-28 summarizes the analysis of diesel locomotive emissions. Increased diesel emissions are anticipated to come only from MARC trains. Amtrak's trains are electric, and freight rail operations are not expected to increase as a result of the Preferred Alternative. The No-Build and build alternative diesel emissions were estimated based upon the length of the tunnel and emissions factors provided by US EPA for CO, VOC, NO_x, and PM. Emissions of SO_2 are dependent on fuel properties, and therefore the US EPA does not provide any locomotive-specific emission factors. As shown in **Table VI-28**, the MARC equipment and operational changes would not have any significant effects on air quality because the net changes in emissions of VOC, NO_x, and $PM_{2.5}$ would be below the *de-minimis* levels.

Table VI-28: Diesel Locomotive Emissions (2040)

Scenario	CO	VOC	NO_x	PM_{10}	$PM_{2.5}$
2040 No Build Alternative	8.6	0.3	6.7	0.1	0.1
2040 Build Alternatives	19.4	0.6	15.2	0.2	0.2
Net Increase	**10.9**	**0.3**	**8.5**	**0.1**	**0.1**
De Minimis Threshold	--	50	100	--	100
Below *De Minimis*?	**--**	**Yes**	**Yes**	**--**	**Yes**

Notes: De Minimis thresholds do not apply within an area in attainment for that specific pollutant. The Project is in an attainment area for CO and PM_{10}.
Values of "Net Increase" subject to rounding. All values in table rounded to the nearest 0.1 tons.
US EPA does not provide any SO2 or SOx emissions factors (see *Emission Factors for Locomotives,* EPA-420-F-09-025, April 2009); furthermore, the project is in an attainment area for SOx.

The results of the emissions inventory are presented in **Table VI-21** in tons per year of pollutants by the build alternatives and No-Build Alternative under future-year conditions. For ease of comparison, the *de minimis* thresholds are also shown. No impacts to air quality exceeding *de minimis* thresholds would occur under the No-Build Alternative.

As shown in **Table VI-28**, the build alternatives would have no net increase in operational emissions exceeding applicable *de minimis* thresholds. The build alternatives would result in no projected increase in diesel freight train operations, and no significant air emissions are generated by electric locomotive trains (e.g., Amtrak). Net increases in emissions would be due to diesel MARC trains. The No-Build and build alternatives diesel emissions were estimated based upon emissions factors provided by the EPA (EPA, 2009). As shown in **Table VI-28**, the MARC equipment and operational changes would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between the 2040 No-Build and the 2040 build alternative scenarios would be below the *de minimis* levels.

As noted above, the net emissions increases would be due to diesel MARC trains. These diesel engines could also produce higher operational costs for the ventilation facilities. This increase comes from an estimated need to operate more ventilation fans at a higher normal frequency to evacuate heat and emissions from the tunnel system. On average, diesel engines generate 5 MW of heat per locomotive as well as combustion by-products, while electric locomotives generate 0.67 MW of heat per locomotive and no combustion by-products.

2. Greenhouse Gas Emissions

It is possible that additional GHG emissions, relative to existing conditions, could be generated due to the increased use of electricity from rail traffic using electrically-driven locomotives and increased GHG emissions from MARC trains. The extent of such an increase is not currently known, and cannot be estimated at this time based on readily available data. However, there is potential for increased rail travel in place of automobile use that would result in a decrease in GHG emissions compared to Alternative 1: No-Build. Improvements to passenger rail infrastructure in the B&P Tunnel corridor resulting in improved travel times, greater reliability, and increased accessibility have the potential to improve the competitiveness of Amtrak and MARC with other modes of transportation, such as automobiles.

The Council on Environmental Quality (CEQ) issued the *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews* on August 1, 2016 (CEQ, 2016). This guidance is issued with the intention to provide greater clarity and more consistency in how agencies address climate change in the environmental impact assessment process. The guidance explains the application of NEPA principles and practices to the analysis of greenhouse gas emissions and climate change, and recommends that "where agencies do not quantify a proposed agency action's projected greenhouse gas emissions because tools, methodologies, or data inputs are not reasonably available to support calculations for a quantitative analysis, agencies include a qualitative analysis in the NEPA document and explain the basis for determining that quantification is not reasonably available."

The specific data inputs for the quantification of greenhouse gas impacts are not available. Forecasts of reductions in vehicle miles traveled (VMT) due specifically to the Project would be required to estimate potential changes in greenhouse gas emissions. Estimates at such a high level of detail appropriate to estimate project-specific impacts are not reasonably available to support a quantitative greenhouse gas emissions analysis. Therefore, a qualitative analysis is included below to show that that increased passenger rail travel, supported by the benefits of the Preferred Alternative, would likely lead to a decrease in GHG emissions.

Improvements to passenger rail infrastructure along the NEC resulting in improved travel times, greater reliability, and increased accessibility have the potential to improve the competitiveness of Amtrak and MARC with other modes of transportation, such as automobiles. According to the US Department of Energy (USDOE), rail travel contributes less per passenger mile greenhouse gas emissions than either automobiles or airplanes (USDOE, 2015). Per the FTA's Public Transportation's Role in Responding to Climate Change (2010) document, the average single-occupancy automobile emits 0.96 pounds (lbs) of carbon dioxide (CO2) per passenger mile; and the average commuter rail (average occupancy) emits 0.33 lbs of CO2 per passenger mile. If the commuter rail was to operate with full occupancy the emission rate would decrease to 0.10 lbs CO2 per passenger mile.

There are approximately 21,600 passengers traveling through the existing B&P Tunnel every day. As an illustrative example, 21,600 passengers multiplied by 0.33 lbs of CO_2 per passenger mile equates to 7,128 lbs of CO_2 per day per mile (3.2 metric tons). In contrast, 21,600 passengers in single-occupancy vehicles would equate to 20,736 lbs of CO_2 per day per mile (9.4 metric tons).

Moreover, a study summarized in the FTA document (FTA, 2010), concluded public transportation reduces U.S. travel by an estimated 102.2 billion VMT each year. The study also found that public transportation reduces CO_2 emissions by 37 million metric tons each year.

In summary, support for the increased competitiveness of Amtrak and MARC passenger rail with other travel modes, particularly single-occupancy vehicles, would potentially result in increased efficiency per passenger mile and corresponding reductions in GHG emissions that would not otherwise occur under Alternative 1: No-Build.

3. Construction Emissions

To evaluate air emissions during the construction of the Preferred Alternative (or Alternative 3A or 3C), equipment activity levels and vehicle parameters were estimated based on the expected construction project elements and construction schedule. The construction project elements involve the realignment and replacement of existing tracks and the construction of new tunnels. Specifically, the project will require the construction of four single-track tunnels each with a cross-section capable of accommodating both passenger and freight service, tunnel portals, and walkways and vent shafts along the tunnel.

The construction activities associated with these project elements include, but are not limited to: site clearing, boring, cut and cover, grading, earthwork, material handling, concrete operations, and staging areas. These construction activities would also require the use of heavy haul and delivery trucks, excavating and grading equipment, material loaders, cranes, and other construction equipment. For the purpose of the evaluation, it was assumed that construction of the Project elements would occur within a six-year period starting in January 2020 and ending December 2025.

Construction-related emissions were estimated using the EPA's Motor Vehicle Emissions Simulator (MOVES Version 2014a) motor vehicle emission factor model, the NONROAD (Version 2008a) emission factor model, and other appropriate guidelines. During construction, air emissions are attributed to the exhaust of heavy equipment (i.e., cranes, excavators, loaders, etc.) and trucks (i.e., water trucks, delivery/haul trucks, etc.).

Emissions also result from construction crew worker vehicles travelling to and from the construction site; and fugitive dust from site preparation, land clearing, material handling and equipment movement on unpaved areas along construction staging areas. Notably, these emissions are temporary in nature and generally confined to the construction site and access/egress roadways.

Emissions from construction activities were estimated based on the projected construction activity schedule, the number of vehicles/pieces of equipment, the types of equipment/type of fuel used, vehicle/equipment utilization rates (including usage factor), the equipment size (horsepower), and the year in which construction would occur. A total of eight different types of standard construction equipment were used as a basis of the construction activities required. It was assumed that this equipment would be on-site for the duration of the construction period of six years. The types of equipment and trucks included are:

- Cranes
- Tractors/Loaders/Backhoes
- Air Compressors
- Rollers
- Excavators
- Signal Boards/Light Plants
- Other Construction Equipment
- Off-highway Truck

The analysis also includes the vehicle miles travelled (VMT) by the construction crew vehicles associated with water, delivery, and haul trucks, as well as miles travelled by construction crew vehicles commuting to and from the site. The construction crew VMT were based on the following current assumptions:

- Water trucks were based on assuming six trucks per day and an on-site trip travel distance of 20 miles.
- Haul truck trips were based on the cubic yards of materials being excavated and a haul truck capacity of 16 cubic yard, which resulted in 107 trucks per day. An on- and off-site trip travel distance of 40 miles was also assumed.
- The delivery truck trips were based on the cubic yards of concrete being delivered and a concrete truck capacity of 10 cubic yard, which resulted in 25 trucks per day. An on- and off-site trip travel distance of 40 miles was also assumed.
- Commuter construction crew vehicles were based on manpower needs and an average roundtrip travel distance of 30 miles.

Additionally, the construction emissions inventory for fugitive dust sources was calculated using emission factors within US EPA's Compilation of Air Pollutant Emission Factors (AP-42). Fugitive dust emissions result from site preparation, land clearing, material handling, and equipment movement on unpaved areas. A fugitive dust (PM_{10}) emission factor of 1.2 tons per acre disturbed per month during construction activity was used, assuming that fugitive dust is generated throughout the construction period such that 25 percent of the Project area would be disturbed in any given construction month. Based on US EPA's AP-42, $PM_{2.5}$ emissions were assumed to be 10 percent of PM_{10} emissions. Erosion control measures and water programs are typically taken into account to minimize fugitive dust and particulate emissions at construction sites. For this analysis a dust control efficiency of 75 percent due to daily watering and other measures (limiting vehicle speed, stockpile control) was assumed. The total disturbed area associated with the B&P Tunnel Project is estimated to be 18.7 acres; based on the size of the staging areas surrounding the south and north portals.

Construction emissions associated with the Preferred Alternative are presented in **Table VI-29** for construction years 2020 through 2025. This analysis applies equally to Alternative 3A or Alternative 3C. As shown, the total emissions associated with construction activities are below the *de minimis* threshold of 100 tons per year for NO_x and $PM_{2.5}$, and 50 tons per year for VOC. Therefore, a Conformity Determination is not required and the B&P Tunnel project is presumed to comply with the SIP.

Table VI-29: Construction Emissions (tons)

Year	CO	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$
2020	75	9	45	0.1	20	4
2021	72	9	44	0.1	20	4
2022	68	9	43	0.1	19	4
2023	64	8	42	0.1	19	3
2024	60	8	41	0.1	19	3
2025	57	7	41	0.1	19	3
De Minimis Threshold (tons per year)	--	50	100	--	--	100
Below *De minimis* for Every Year?	**--**	**Yes**	**Yes**	**--**	**--**	**Yes**

4. Ventilation Facility Emissions

The B&P Tunnel ventilation system serves multiple purposes including: furnishing outside “fresh” air into the underground spaces, removing air emissions and heat from inside the tunnel, and providing a means for evacuating smoke and other by-products in the event of a fire or other emergency. Under normal operating conditions, the removal/dilution of air emissions is aimed primarily at the combustion products from the burning of diesel fuel. The pollutants of concern include NO_x, CO, VOC, and PM.

The American Meteorological Society/US EPA Regulatory Model (AERMOD)[5] was used to evaluate the potential 1-hour NO_2 emissions from the proposed B&P Tunnel Project. For the AERMOD analysis, a “worst case” scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 8:00 am to 8:00 pm as these are assumed to be peak hours of operation. No diesel operations were assumed from 12:00 am to 4:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time.

For this analysis, air emissions from the diesel train operations were assumed to exit through the north and south portals, and from all of the three ventilation facilities (i.e., South, Intermediate, and North). Each ventilation facility is defined in AERMOD as a single “point source”, and the portals are considered as “area sources”.[6] Each ventilation facility represents the location where air from the tunnel is exhausted vertically into the atmosphere. Seasonal variability (i.e., summer and winter) was used when calculating the potential emission rates at each ventilation facility and tunnel portal. The temperature of the air being exhausted from each ventilation facility is based on assumed train operations and tunnel thermal properties. **Tables VI-30 and VI-31** present the parameters and NO_2 emission rates used to model each vent and portal in AERMOD.

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[5] US EPA, AERMOD (Version 15181), https://www3.epa.gov/ttn/scram/dispersion_prefrec.htm#aermod.

[6] In AERMOD point sources are defined as a single, identifiable source of emissions and area sources are defined as a two-dimensional source of diffuse emissions.

Table VI-30: Ventilation Facility Emission Parameters and Rates

Ventilation Facility	Total Vent Area (ft^2)	Vent Height (ft)	Vent Diameter (ft)	Vent Exhaust Temperature (°F)	Vent Exhaust Flow Rate (kcfm)	Vent Exhaust Velocity (ft/s)	NO_2 Emission Rate (lb/hr)
Summer Season (April – September)							
SVF	530	55	26.0	105	1,598	50	17.0
IVF	400	62	22.6	88	1,180	50	3.6
NVF	530	50	26.0	92	1,598	50	7.3
Winter Season (October – March)							
SVF	530	55	26.0	92	1,598	50	15.0
IVF	400	62	22.6	74	1,180	49	3.2
NVF	530	50	26.0	73	1,597	50	6.3

Note: IVF = Intermediate Ventilation Facility, NVF = North Ventilation Facility, SVF = South Ventilation Facility, °F = degrees Fahrenheit, ft/s = feet per second, kcfm = thousand cubic feet per minute, and lb/hr = pounds per hour.
Source: Parsons Brinckerhoff, 2016.

As the train exits the tunnel, it has a continuous source of momentum which creates a mechanically mixed "jet" of air with a length, width, and height. Based on the geometry of the exit portals, as well as the speed and size of the trains, the jet of air from each portal was computed to be 80 feet wide, 28 feet high, and 300 feet long.[7] The NO_2 emission rates from the jet of air exiting the tunnel portals used in the analysis are shown in **Table VI-31**.

Table VI-31: Portal Emission Rates

Tunnel Portal	NO_2 Emission Rate (lb/hr)
Summer Season (April – September)	
South	0.009
North	<0.001
Winter Season (October – March)	
South	0.001
North	<0.001

Note: lb/hr = pounds per hour.
Source: Parsons Brinckerhoff, 2016.

The effects of building downwash from the ventilation facilities were included in the air dispersion modeling analysis and were calculated using US EPA's Building Profile Input Program (BPIP).[8] **Table VI-32** presents the ventilation facilities' building dimensions.

Table VI-32: Ventilation Facilities Dimensions

Ventilation Building	Building Dimensions (feet)			
	Building Height	Stack Height	Width	Length
SVF	38	55	190	220
IVF	59	62	125	180
NVF	40	50	30	60

Note: IVF = Intermediate Ventilation Facility, NVF = North Ventilation Facility, and SVF = South Ventilation Facility.
Source: Parsons Brinckerhoff, 2016.

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[7] Parsons Brinckerhoff, 2016.

[8] US EPA, BPIP (Version 04274), https://www3.epa.gov/ttn/scram/dispersion_related.htm#bpipprm.

The locations at which concentrations are estimated within the model are known as “receptors”. A Cartesian receptor grid (with over 2,000 receptors) was used to predict concentrations around the locations of the ventilation facilities and portals. The receptor grid extended out to approximately 2.5 miles from the center of the emissions sources and was spaced as follows:

- 0 to 2 km = 200-meter receptor spacing, and
- 2 to 4 km = 300-meter receptor spacing.

This grid spacing resulted in a receptor point being located on about every city block, including locations immediately surrounding each portal and ventilation facility.

US EPA modeling guidance recommends using five years of meteorological data when predicting pollutant concentrations with AERMOD. The most recent meteorological data (i.e., from 2011 through 2015) from Baltimore-Washington International Airport (KBWI) and Phillips Army Airfield/Aberdeen Proving Ground (KAPG) were used in the air dispersion analysis. Notably, the B&P Tunnel Project is located approximately 9 miles north of KBWI and approximately 29 miles southwest of KAPG; therefore, it is assumed that meteorological conditions at KBWI and KAPG are representative of the project location.

Background concentrations account for existing nearby emissions sources. The background concentration was obtained from the nearby EPA monitoring station located in the Oldtown Fire Station at 100 Hillen Street in Baltimore, which is approximately 1.5 miles from the project. Following US EPA guidance, the 1-hour NO_2 background concentration was based on the most recent (i.e., 2013 through 2015) three-year average of the 98th percentile of the daily 1-hour maximum value, which equals 51 ppb.

The results of the ventilation facility and portal dispersion modeling are shown in **Table VI-33.** The maximum predicted 1-hour NO_2 concentration from all sources combined (the three ventilation facilities as well as the north and south portals) was 12.8 ppb. When added to the NO_2 background concentration of 51 ppb, the total predicted 1-hour concentration amounted to 63.8 ppb, which is below the NAAQS of 100 ppb. The table also presents the individual concentrations due to each emissions source individually.

Notably, because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS.

Table VI-33: Ventilation Facility and Portal Emissions Results (parts per billion [ppb])

Emissions Source	Maximum Predicted 1-hour NO_2 Concentration	Measured Background NO_2 Concentration	Total 1-hour NO_2 Concentration	1-hour NO_2 NAAQS Threshold	Below NAAQS Threshold?
SVF	12.6	51.0	63.6	100	Yes
IVF	2.9	51.0	53.9	100	Yes
NVF	7.5	51.0	58.5	100	Yes
South Portal	1.8	51.0	52.8	100	Yes
North Portal	0.2	51.0	51.2	100	Yes
All Sources	**12.8**	**51.0**	**63.8**	**100**	**Yes**

5. Mitigation

a. Construction

Exhaust emissions due to construction activities can be reduced by reducing equipment idling times, storing recyclable construction materials on-site to reduce the amount of haul truck trips, and using low- or zero-emissions equipment. Employees could also be encouraged to carpool in order to reduce the vehicle miles travelled associated with their trips to and from the site.

Fugitive dust (PM) emissions can be mitigated by regularly watering or applying dust suppressants to unpaved areas, installing pads to deter track-out as vehicles enter and leave the site, reducing vehicle speeds on unpaved roads, covering materials stockpiles, covering haul trucks during materials transportation, and limiting construction activity during high wind events. Ensuring the contractor has knowledge of appropriate fugitive dust and equipment exhaust controls is also a measure to reduce emissions.

The Preferred Alternative will include development and implementation of a Construction Emission Reduction Plan to include measures such as reducing equipment idling times, utilizing on-site storage to reduce truck haul trips, using low-emissions equipment, dust suppression measures, ensuring the contractor has knowledge of appropriate fugitive dust and equipment exhaust controls, and other measures.

In order to reduce emissions, construction activities will be performed in accordance with Maryland's *Standard Specifications for Construction and Materials* which outlines the procedures to be followed by contractors involved in site work. In addition, the Maryland Air and Radiation Management Administration has determined that the specifications are consistent with the requirements of the Regulations Governing the Control of Air Pollution in the State of Maryland. Therefore, during the construction period, all appropriate measures cited in the Code of Maryland Regulations (COMAR) 26.11.06.03D - *Fugitive Particulate Matter from Materials Handling and Construction* would be employed to reduce emissions.

b. Ventilation

Preliminary design of the ventilation facilities has been coordinated with development of the air quality dispersion modeling presented here, and design of the ventilation facilities has been modified in order to ensure no violation of NAAQS. In particular, the Preferred Alternative was modified to include vertically-oriented fans at ventilation facilities to facilitate dispersion and avoid violation of applicable air quality regulations.

6. Conclusions

The Preferred Alternative, as well as Alternatives 3A and 3C, would not result in adverse impacts to air quality due to operational emissions. The net change in diesel locomotive emissions of NO_x, VOC, and $PM_{2.5}$ with the proposed project would be below the applicable *de minimis* levels. The analysis accounted for the projected increase of MARC operations in 2040 and the planned replacement of existing MARC electric locomotives with diesel-powered locomotives. Furthermore, there are no projected increases in diesel freight train operations, and no significant direct air emissions generated by the electric locomotive trains operated by Amtrak. Emissions would still occur from operations under Alternative 1: No-Build.

The construction of the Preferred Alternative, Alternative 3A, or Alternative 3C would not result in adverse impacts to air quality. The emissions of NO_x, VOC, and $PM_{2.5}$ would be below the *de minimis* levels for every construction year. The Study Area is currently in attainment for CO, so no *de minimis* threshold applies. In addition, emissions associated with the construction of the project would be short-term and would not result in a long-term change to local air quality. Application of the measures in Maryland's *Standard Specifications for Construction and Materials* as well as COMAR 26.11.06.03D would reduce construction-related emissions.

The ventilation system emissions analysis results show that the ventilation facilities, currently included as part of the Preferred Alternative, would be below applicable de minimis levels and would not result in violation of NAAQS air quality regulations.

I. Noise

This section presents an assessment of potential noise impacts for the Preferred Alternative, Alternative 3A, and Alternative 3C. This FEIS includes an overview of methodology, predicted impacts, and potential mitigation measures. More information on the noise assessment is available in the *B&P Tunnel FEIS Noise Technical Report* published on the Project website.

1. Impact Assessment Methodology

Because FRA has not established noise and vibration regulations, FRA defers to regulations published by the FTA. The operational noise effects were evaluated using the guidelines set forth by the FTA Transit Noise and Vibration Impact Assessment (FTA, 2006). The temporary construction effects were also evaluated using both the FTA guidelines and COMAR 26.02.03—Control of Noise Pollution.

In accordance with the FTA Transit Noise and Vibration Impact Assessment guidelines, a screening assessment was conducted to identify locations where the project may cause noise impact. The FTA screening distances for operations are based on typical commuter rail systems. A screening distance of 750 feet was computed and used to determine if noise-sensitive land uses are present within a defined area of project noise influence. This distance represents the unobstructed distance from a commuter rail line to where the project noise reaches an Ldn of 50 dBA. The screening distance was applied from the centerline of the proposed project to determine the noise area of potential effect (APE). Since noise-sensitive land uses were within the screening distance, further analysis was needed.

An FTA General Assessment analysis was conducted for the DEIS Alternatives 3A, 3B, and 3C and summarized below (see the DEIS for more detail). Noise impact was then assessed for the Preferred Alternative using the FTA Detailed Assessment methodology. Based on the results of the prior DEIS analysis (i.e., FTA General Assessment), noise impacts were predicted to occur only in vicinity of the south portal. Therefore, a Detailed Noise Analysis was carried out for noise sensitive receptors in this area.

Noise exposure due to the ventilation of the proposed B&P Tunnel Project was assessed in terms of the construction and operation of the ventilation facilities. The applicable noise ordinances and guidelines were assessed relative to the land uses surrounding each portal and the intermediate mid-tunnel location. The ventilation facilities would be designed in order to meet the Baltimore Health Code noise regulations. This would ensure that, during operation of the ventilation facilities, the resulting noise levels in the adjacent communities would meet the applicable standards.

2. Evaluation Criteria

a. Operational

The FTA's guidance manual, *Transit Noise and Vibration Impact Assessment* (FTA, 2006), presents the basic concepts, methods and procedures for evaluating the extent and severity of noise impacts from transit projects. Transit noise impacts are assessed based on land use categories and sensitivity to noise from transit sources under the FTA guidelines.

The reference noise levels for each of the proposed noise sources and related operating characteristics are summarized in **Table VI-34**. These data are based on default FTA data.

Table VI-34: Summary of Noise Source Reference Data

Source Type	Specific Source	Reference Conditions	Reference SEL (dBA)
Fixed Guideway	Locomotive	Diesel-electric, 3000 hp, throttle 5	92
	Rail Cars	Ballast, welded rail	82

Note: SEL noise levels are reported in decibels at a reference distance of 50 feet and a reference speed of 50 mph. SEL is the sound exposure level that converts the cumulative noise energy of an event into one second.
Source: Transit Noise and Vibration Impact Assessment (FTA, 2006).

The tunnel operations data are summarized in **Table VI-35** for the Preferred Alternative. Existing average train operating speeds are projected to be an estimated 30 mph at the north portals and approximately 70 mph at the south portal based on the NEC FUTURE Project (FRA, 2015).

Table VI-35: Tunnel Operating Characteristics in the Build Year (2040)

Train Service	Locomotive Type	Total Bi-directional Frequencies		Consist Data		Speed N/S* (mph)
		Daily	Peak Hour	# of Locos	# of Cars	
MARC (Regional)	Diesel	164	15	1	8	30/70
Acela (Intercity Express)	Electric	82	8	n/a	14	30/70
NE Regional (Intercity Corridor)	Electric	48	4	1	8	30/70
Freight	Electric	2	0	1	14	30/70
Metropolitan	Diesel	92	8	n/a	30	30/70
Total	All	388	35			

*Weighted average speeds based upon projected speeds of Amtrak and MARC trains. Of note, MARC trains stop at the West Baltimore Station located approximately 1/2-mile south of the proposed south portal.
Source: NEC FUTURE Project (FRA, 2015).

The FTA noise criteria are delineated into two categories: moderate and severe impact. The level of impact at any specific site is established by comparing the predicted future Project noise level at the site to the existing noise level at the site. Noise monitoring locations are displayed below on **Figure VI-22**.

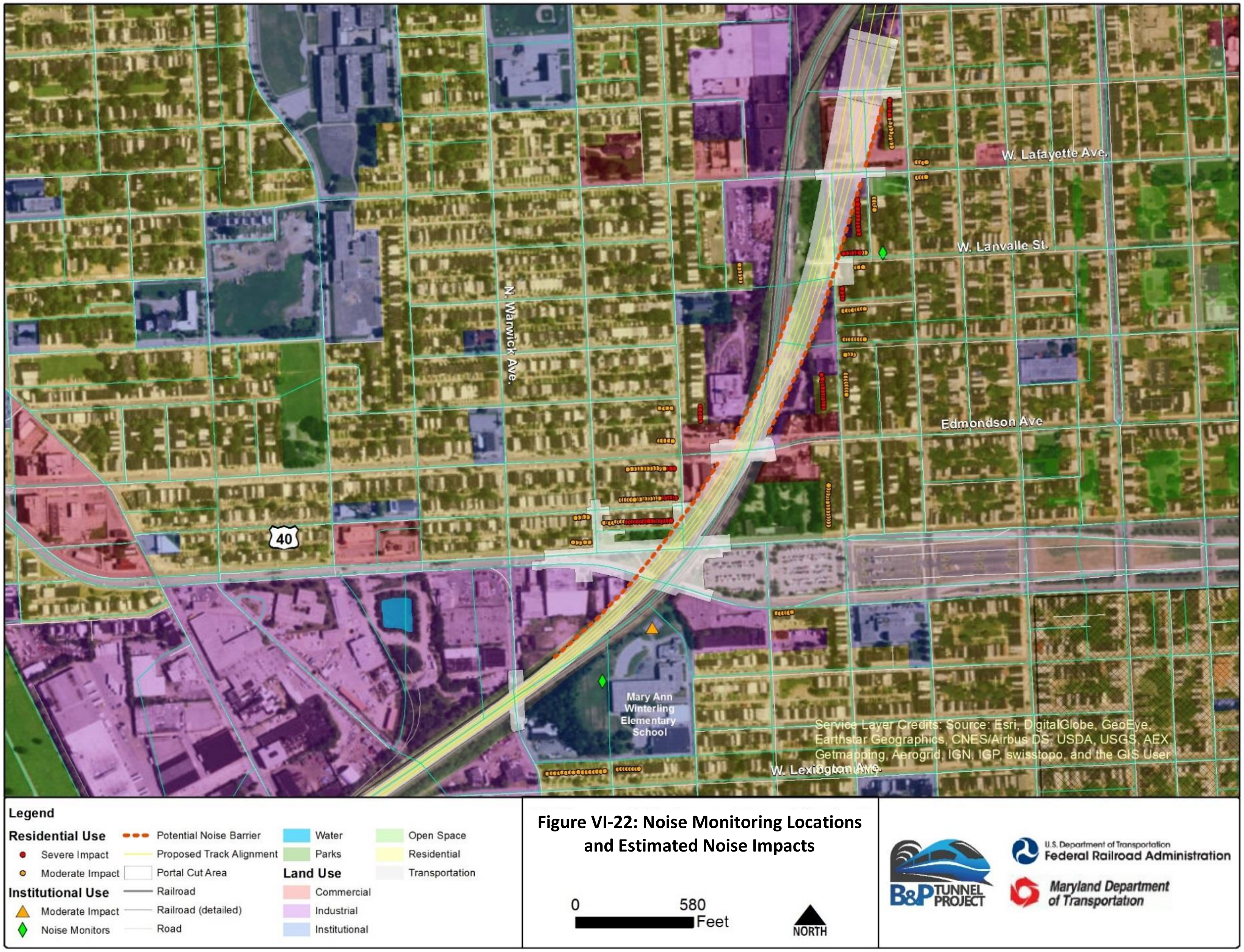


Figure VI-22: Noise Monitoring Locations and Estimated Noise Impacts

b. Ventilation

Stationary sources of noise, such as ventilation facilities, would be subject to the operational noise level standards included in the Noise Regulation of the Health Code of Baltimore City. This regulation provides the noise limits for manufacturing, commercial, and residential zones in Baltimore City – depending on the source of noise and the types of adjacent land uses. For noise generated within residential zones, there is a limit of 55 dBA at any point on the property line of the use (the noise limit is described as a measured maximum sound level; although not specifically stated, it is assumed to be in terms of L_{max}). Between 9:00pm and 7:00am, the limit is 5 dBA lower for any uses within a residential zone (that is, 50 dBA). Although the Health Code allows for different noise limits for "short, durational deviations", for the purposes of this project it is assumed that the noise limit for the ventilation facilities is L_{max} 50 dBA at the property boundary of each ventilation facility.

c. Construction

During the EIS development phase of a project, construction details are limited. Therefore, the FTA guidelines suggest evaluating prototypical construction scenarios against local ordinances (if applicable criteria are available). The FTA design guidelines, for example, are evaluated against noise levels from the two loudest pieces of equipment that, under worst case conditions, are assumed to operate continuously for one hour during both the daytime (7 am to 10 pm) and nighttime (10 pm to 7 am) periods.

In Baltimore City, the local noise ordinance identified for the project study corridor exempts construction activities. Since the local noise ordinance does not provide quantitative noise limits on construction activities, the noise policy from MDE was reviewed to assess temporary construction activities.

The MDE has established the following noise guidelines for construction activities (MDE 26.02.03, Control of Noise Pollution). These maximum allowable sound pressure levels, although not specified as such, are assumed to be L_{max} levels:

- 90 dBA – daytime (7 am to 10 pm) – residences,
- 55 dBA – nighttime (10 pm to 7 am) – residences,
- Blasting during construction is exempt during the daytime (7 am to 10 pm),
- Pile driving during construction is exempt from 8 am to 5 pm, and
- Construction activities on public property are exempt.

3. Impacts

a. Alternative 1: No-Build

Future ambient noise levels under Alternative 1: No-Build are anticipated to be similar to those under existing conditions. The Study Area is characterized by urban communities that include major highways (such as I-83) and arterials (such as North Fulton Avenue and West North Avenue). Regardless of other projects in the Long-Range Transportation Plan, ambient noise under the Alternative 1: No-Build is anticipated to be similar to that of the existing conditions, as shown in **Table VI-36**. Existing conditions are notably already above the 55 dBA residential nighttime thresholds recommended.

b. Preferred Alternative

Noise levels were calculated at discrete receptor locations along the railroad including any noise reduction from shielding due to building rows or where the alignment was in a cut (i.e., trench). The results were then compared to the FTA impact criteria to identify moderate and severe impacts. Based on current US Census data, a total of 437 persons were predicted to be impacted, of which 141 were predicted to be severely impacted. The total number of moderate and severe impacts predicted is reduced substantially from those presented in the DEIS due to revised alignment that more closely aligns with the existing NEC. The severe impacts are predicted at residential areas nearest the railroad between the West Baltimore station and the south portal. One school, the Mary Ann Winterling Elementary School, is predicted to be moderately impacted. **Table VI-36** summarizes the detailed results of the impact assessment, and **Table VI-37** provides a comparison of the impacts to the DEIS Alternatives. **Figure VI-22** shows the locations of the noise impacts.

Table VI-36: Number of Buildings Potentially Affected by Noise from the Preferred Alternative

Receptor Area Description	Side of Tracks*	Land Use Category**	Noise Metric	Existing Noise Level	Noise Impact Criteria		Project Noise Levels	Impact Type
					Moderate	Severe		
Residences South of the West Baltimore Station	EB	2	L_{dn}	63	60	66	60-63	Moderate
Mary Ann Winterling Elementary School	EB	3	L_{eq}	64	66	71	68	Moderate
Residences between the West Baltimore Station and the South Portal	EB	2	L_{dn}	63	60	66	60-68	Moderate to Severe
Residences between the West Baltimore Station and the South Portal	WB	2	L_{dn}	63	60	66	60-72	Moderate to Severe

Count of Impacts	Moderate	Severe	Total
Residential (Number of Persons)	296	141	437
Institutional (Number of Schools)	1	0	1

*Eastbound (EB) and Westbound (WB)
Land uses defined in **Chapter V, **Table V-25**

Table VI-37: Comparison of Preferred Alternative Noise Impacts to DEIS Alternatives

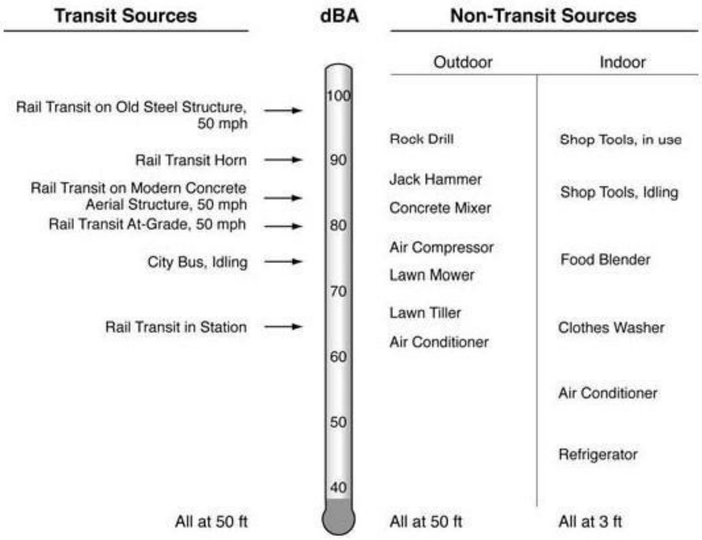
Alternative	Number of Affected Residential (Persons)		Number of Affected Institutional (Buildings)	
	Moderate	Severe	Moderate	Severe
3A (DEIS)	254	0	0	0
3B (DEIS)	1,077	175	1	0
3C (DEIS)	975	111	4	0
FEIS Preferred Alternative	296	141	1	0

Noise levels in the immediate vicinity of the ventilation facilities would be caused by the continual operation of the ventilation fans within each facility. The horizontal fans would operate periodically and would generate sound that would propagate through the louvers on the top of the ventilation facilities. As discussed in **Section III.B.6**, fans would operate periodically when NO_2 levels in the tunnel exceed a set threshold or in emergencies when smoke is present in the tunnel. NO_2 levels are likely to be highest when the levels of diesel locomotive operations are highest, or when congestion causes trains to operate slowly or at idle in the tunnel. However, there is not enough information currently available to determine the duration or specific hours per day the fans would run.

The Preferred Alternative tunnel design includes three ventilation facilities: one near each portal and an intermediate facility located above the tunnel. The three ventilation facilities would be subject to the noise level standards included in the Noise Regulation of the Health Code of Baltimore City.

The ventilation facilities would be designed to be below the L_{max} 50 dBA noise limit. A noise level of 50 dBA is roughly between that of a refrigerator and an air conditioner at a distance of three feet, as shown in **Figure VI-23**. The design standard for the ventilation facilities would limit the outdoor noise level, when the fans are in operation, to L_{max} 50 dBA or below at the facility property lines.

Figure VI-23: Typical A-Weighted Sound Levels



c. Alternative 3A

Alternative 3A was assessed in the DEIS for potential operational noise impacts. The assessment estimated that 254 residential persons would be moderately affected. No severe residential affects would occur, and no institutional buildings would be affected (**Table VI-37**). Refer to the DEIS for more information on the operational noise assessment of Alternative 3A. Ventilation facilities for Alternative 3A would emit noise identical to that described under the Preferred Alternative above. Additional information on Alternative 3A can be found in the DEIS.

d. Alternative 3C

Alternative 3C was assessed in the DEIS for potential operational noise impacts. The assessment estimated that 975 residential persons would be moderately affected and 111 would be severely affected. Four institutional buildings would be moderately affected, and no institutional buildings would be severely affected (**Table VI-37**). Refer to the DEIS for more information on the operational noise assessment of Alternative 3C. Ventilation facilities for Alternative 3C would emit noise identical to that described under the Preferred Alternative above. Additional information on Alternative 3C can be found in the DEIS.

4. Mitigation

FTA's guidance states that noise mitigation should be considered for areas of severe impact, unless the project's location or alignment can be modified to eliminate the impact. Noise impacts designated as moderate also require consideration for mitigation, but additional project factors should first be considered when assessing mitigation (such as the cost of the mitigation relative to the amount of noise reduction, the number of affected receptors, etc.). Since noise impacts were predicted for the proposed project, a range of mitigation measures were investigated for addressing train operations.

Table VI-38 shows the amount of noise reduction that a mitigation measure or combination of mitigation measures would need to provide to mitigate severe impacts. Mitigating severe impacts within these areas is likely achievable as the maximum reduction required to reduce levels below the Severe threshold is 7 dB.

Table VI-38: Required Noise Reduction to Mitigate Noise Impacts

Receptor Area Description	Mitigate Severe Impacts
Residences South of the West Baltimore MARC Station, EB	No severe impacts
Mary Ann Winterling Elementary School, EB	No severe impacts
Residences between West Baltimore MARC Station and South Portal, EB	1-3 dB
Residences between West Baltimore MARC Station and South Portal, WB	1-7 dB

The Preferred Alternative will include design and implementation of noise barriers to mitigate anticipated severe operational noise impacts. The implementation of noise barriers along the railroad right-of-way would be effective in reducing outdoor noise levels, within practical limits of cost and feasibility. The approximate locations of proposed noise barriers are shown in **Figure VI-22** and the results of the noise barrier analysis are provided in **Table VI-39**. The approximate height of 6-7 feet above ground-level was based on reducing the severe noise impacts to levels below the FTA impact criteria. Of note, some of the projected moderate noise impacts would also be reduced somewhat by the proposed barriers. The total barrier length for the project would be approximately 3,700 feet (0.7 miles) at a total cost of about $700,000.

A more-detailed noise barrier design will be conducted during the final design phase of the project. Factors that could affect the final barrier design include: barrier installation on rail bridges and at the West Baltimore MARC station; gaps in the barriers that would be necessary to accommodate roadway overpasses at Edmondson Avenue and West Lafayette Avenue; and, the varying depth of the portal cut area from at-grade near Edmondson Avenue to tunnel elevation at the south portal (which could vary the barrier height along this section).

Table VI-39: Preliminary Noise Barrier Design

Location of Barrier	Height (feet)	Length (feet)	Cost (Dollars)*	Noise Reduction (dB)
Eastbound Side				
Edmondson Avenue to W. Lafayette Avenue	6	1,370	$246,600	9
W. Lafayette Avenue to W. Mosher Street	6	320	$57,600	9
Westbound Side				
N. Warwick Avenue to Edmondson Avenue	7	1,290	$270,900	13
Edmondson Avenue to W. Lanvale Street	6	720	$129,600	7
Total		**3,700**	**$704,700**	7 to 13

a. Construction

Temporary noise impacts may occur during construction of the B&P Tunnel at residences and other sensitive receptors along the proposed project. To reduce any construction noise impacts that may occur, the Project will develop and implement a Construction Noise Mitigation Plan. The plan will include the following measures, to the extent practicable:

- Location of construction equipment and material staging areas away from sensitive receptors where possible
- Temporary noise barriers and advanced construction of permanent barriers to serve during construction where possible

- Routing of construction traffic and haul routes along roads in non-noise sensitive areas.

All mitigation measures would be confirmed and refined during the final design and permitting phase of the project.

b. Ventilation System Noise

To achieve the required reduction in noise level, cylindrical or rectangular sound attenuators would be mounted directly to each fan or to the ductwork within the system. In addition, the building itself would partially shield noise generated within the interior of the ventilation facility, which would further reduce noise levels outside of the building. The proposed ventilation facilities, with attenuators installed, will emit noise at approximately 45 dBA. This would meet the design standard of L_{max} 50 dBA at the facility property lines (i.e., the noise level generated would be less than the design standard). By comparison, the measured L_{max} at a nearby site ranged from 47 dBA to 92 dBA, and the average of all measured L_{max} values was 72 dBA.

J. Vibration

This section provides an assessment of potential vibration and ground-borne noise impacts resulting from construction and operation of the B&P Tunnel Preferred Alternative, as well as Alternative 3A and Alternative 3C. More detailed information can be found in the *B&P Tunnel FEIS Vibration Technical Report* published on the Project website.

Vibration originates at the track bed, where the train wheels rolling on the rails create vibration energy that is transmitted into adjacent ground and propagated through soil and rock strata to the foundations of nearby buildings. Ground-borne noise is the noise radiated from the motion of room surfaces. When buildings vibrate, they can emit a noise or rumble known as ground-borne noise which may be perceptible to people inside them.

1. Operational Impact Assessment Methodology

The operational impacts were evaluated using the guidelines set forth by the FTA *Transit Noise and Vibration Impact Assessment* (FTA, 2006). Vibration impacts were evaluated using prediction modeling according to the FTA's "General Assessment" guidelines. To determine the appropriate FTA evaluation criteria, rail operations along the NEC were evaluated using bi-directional train frequencies, number of locomotives, number of coaches, and speed for MARC, Acela, NE Regional, and freight services. The vibration levels from a diesel locomotive are assumed to be the same regardless whether it is pulling a passenger train or a freight train. In addition, temporary construction vibration levels were also evaluated using both the FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities. The modeling assumptions and input data used to predict existing and future vibration levels from rail service in the existing B&P Tunnel are summarized as follows:

- A screening assessment identified 6,858 land-uses within the FTA screening distance of 300 feet, including:
    - 6,287 Residential and Mixed-Use parcels;
    - 101 Institutional properties;
    - 2 Parks (Maple Leaf Park and Arnold Sumpter Park);
    - 179 Commercial parcels;
    - 9 Industrial parcels; and
    - 280 Unknown or undeveloped parcels.

- The FTA vibration thresholds selected for the evaluation criteria are based on the total number of daily trains traveling through the community. Based on the average daily operations for each alternative and as described in the *Vibration Technical Report,* the FTA "frequent" criteria were selected to evaluate the potential impacts.

- Train speeds were applied using the same assumptions as the noise assessment, which include 30 miles per hour (mph) under Alternative 1 and a range of speeds from 30 mph at the east or north portal to 70 mph at the west or south portal for Alternatives 3A, 3B, and 3C.
- Adjustments for continuously-welded track were applied using the FTA guidelines for Alternatives 3A, 3B and 3C.
- To account for improvements to the existing corridor as well as the proposed tunnels, an increase of 5 VdB was applied to Alternative 1 to reflect adverse track and tunnel conditions similar to jointed-rail track.
- The FTA default ground-surface vibration curves for diesel-electric locomotives (which are heavier than the railcars) were utilized to reflect typical ground propagation characteristics.
- Adjustments for ground-borne noise reflect typical ground conditions with peak frequencies between 30-60 Hz.

Compared to the original analysis conducted as part of the DEIS, the analysis for the FEIS applied additional adjustments based on new information collected since the DEIS. As a result, predicted impacts are reduced due to refinements in Project alignments and modeling assumptions. A comparison of the two approaches is summarized below.

- The DEIS applied a highly conservative approach assuming the following:
  - Tunnels bored through soil
  - Typical soil-propagation characteristics
  - No building coupling losses
  - Safety factor of 3 VdB
- The FEIS revised analysis applied an updated set of adjustments based on new information developed by the project team since completion of the DEIS:
  - Tunnels bored through rock
  - Efficient soil-propagation characteristics
  - Building coupling losses typical for single-family wood-frame structures
  - No safety factor

The FTA vibration criteria are related to ground-borne vibration levels that are expected to result in human annoyance, and are based on root mean square (RMS) velocity levels expressed in VdB. FTA's experience with community response to ground-borne vibration indicates that when there are only a few train events per day, it would take higher vibration levels to evoke the annoyance level that would be expected from more frequent events. This experience is taken into account in the FTA criteria by distinguishing between projects with frequent, occasional, or infrequent events. The frequent events category is defined as more than 70 events per day; to be conservative, the FTA frequent criteria were used to assess ground-borne vibration impacts in the Study Area.

The vibration criteria levels shown in **Table VI-40** are defined in terms of human annoyance for different land use categories such as high sensitivity (Category 1), residential (Category 2), and institutional (Category 3). In general, the vibration threshold of human perceptibility is approximately 65 VdB.

Table VI-40: Ground-Borne RMS Vibration Impact Criteria for Annoyance During Operations and Construction

Receptor Land Use		Ground-borne Vibration Levels (VdB)			Ground-borne Noise Levels (dBA)		
Category	**Description**	**Frequent Events**	**Occasional Events**	**Infrequent Events**	**Frequent Events**	**Occasional Events**	**Infrequent Events**
1 (High)	Buildings where low vibration is essential for interior operations	65	65	65	N/A	N/A	N/A
2 (Residential)	Residences and buildings where people normally sleep	72	75	80	35	38	43
3 (Institutional)	Daytime institutional and office use	75	78	83	40	43	48
Specific Buildings	TV/Recording Studios/Concert Halls	65	65	65	25	25	25
	Auditoriums	72	80	80	30	38	38
	Theaters	72	80	80	35	43	43

Source: Transit Noise and Vibration Impact Assessment (FTA, 2006).

2. Operational Vibration Impact Assessment

To assess impacts along an existing, heavily-used rail corridor, the Preferred Alternative was modeled and compared to the FTA impact criteria to evaluate the change in ground-borne vibration. The assessment incorporates the most up-to-date alignment including all refinements made since the DEIS. Additional geotechnical information has also been incorporated since the DEIS to establish more accurate modeling assumptions. Along the existing tunnel alignment, future predicted vibration levels under Alternative 1: No-Build were compared against the levels predicted for the Existing Condition to determine the relative change in impact. Along the Preferred Alternative, future predicted vibration levels were compared against the FTA absolute criteria threshold limits to determine the onset and magnitude of impact. As shown in **Table VI-41**, no ground-borne vibration impacts from the Preferred Alternative are predicted. Predicted impacts from ground-borne noise are shown in **Table VI-42**. Alternatives 3A and 3C are provided in the tables below as comparison.

Table VI-41: Inventory of Ground-Borne Vibration Impacts Predicted During Operation

Alternative	Number of Impacts (Ground-Borne Vibration)			
ID	Total	Residential (Cat. 2)	Parks (Cat. 3)	Institutional (Cat. 3)
No-Build Alternative	0	0	0	0
3A	0	0	0	0
3B Preferred Alternative	0	0	0	0
3C	0	0	0	0

NB: 6858 receptor set used for alternative analyses.

Table VI-42: Inventory of Ground-Borne Noise Impacts Predicted During Operation

Alt.	Number of Impacts (Ground-Borne Noise)			
ID	**Total**	**Residential (Cat. 2)**	**Parks (Cat. 3)**	**Institutional (Cat. 3)**
No-Build Alternative	12	12	0	0
3A	156	156	0	0
3B Preferred Alternative	449	444	0	5
3C	168	168	0	0

NB: 6858 receptor set used for alternative analyses

a. Alternative 1: No-Build

Predicted vibration levels under Alternative 1: No-Build due to ground-borne vibration from train passbys remain unchanged, and are not predicted to exceed the FTA frequent impact criteria at any receptors or institutional land-uses. Similarly, no exceedances of the FTA ground-borne vibration impact criteria are predicted at any Category 1 land-uses (highly sensitive equipment) under Alternative 1.

Vibration from train passbys in tunnels could contribute to ground-borne noise inside residences due to vibrating surfaces. Impacts under Alternative 1: No-Build due to ground-borne noise from train passbys are predicted to exceed the FTA frequent impact criterion of 35 dBA at 12 residences and other FTA Category 2 land-uses, **Table VI-42**. No exceedances of the FTA impact criterion of 40 dBA are predicted at FTA Category 3 receptors. FTA Category 1 land-uses (highly sensitive equipment) are generally not sensitive to ground-borne noise.

Alternative 1: No-Build would result in vibration impacts equivalent to existing conditions. Future vibration levels under Alternative 1: No-Build are expected to be similar to those currently experienced, because existing vibration is dominated by existing rail traffic along the NEC. Since no project components or design elements are included under Alternative 1: No-Build, the alternative would not cause any new vibration impacts, and existing impacts would remain unchanged.

b. Preferred Alternative

Impacts from the Preferred Alternative due to ground-borne vibration from train passbys are not predicted to exceed the FTA *frequent* impact criteria at FTA Category 1, 2, or 3 land uses (**Table VI-41**). No vibration levels high enough to damage buildings are estimated from operations, including fragile historic buildings. Humans can sense vibration at approximately 65 VdB. Vibration levels between 0 and 65 VdB are anticipated for areas within approximately 500 feet of the proposed track centerlines. Some locations directly adjacent to the surface tracks near the south portal will have estimated vibration levels between 65 and 72 VdB.

Levels under the Preferred Alternative due to ground-borne noise from train passbys are predicted to exceed the FTA *frequent* impact criteria at 444 residences and other FTA Category 2 land-uses (**Table VI-42**). Exceedances of the FTA ground-borne noise impact criteria are predicted at five Category 3 land-uses (institutions) with the Preferred Alternative. More detailed vibration analysis and monitoring will occur during the final design stage. **Figure VI-24** shows the location of predicted ground-borne impacts resulting from the Preferred Alternative. The Preferred Alternative will implement vibration control measures to mitigate the ground-borne noise impacts in exceedance of FTA frequent impact criteria. Further discussion on mitigation is included in **Section VI.J.4** below.

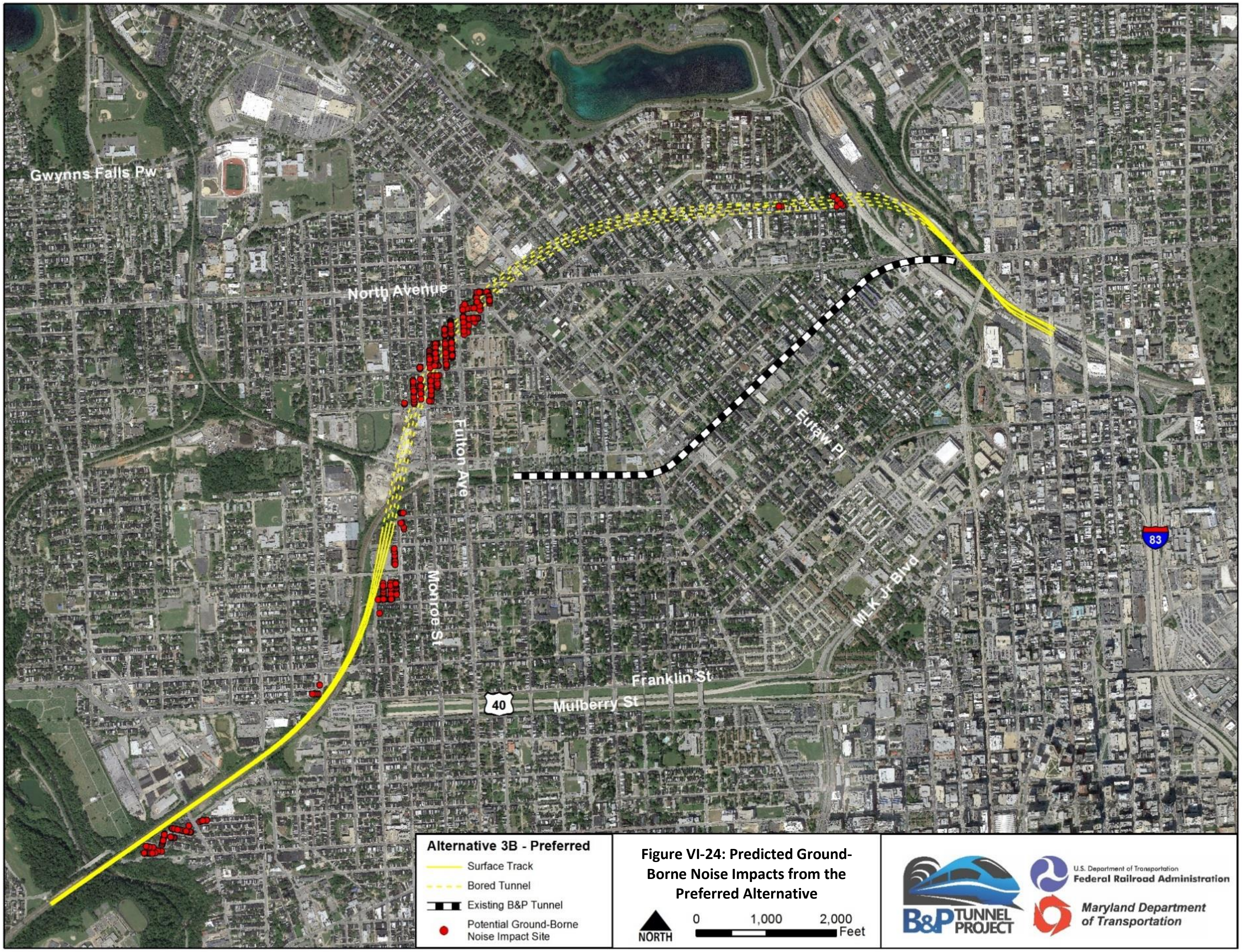


Figure VI-24: Predicted Ground-Borne Noise Impacts from the Preferred Alternative

c. Alternative 3A

Impacts from Alternative 3A due to ground-borne vibration from train passbys are not predicted to exceed the FTA frequent impact criteria at FTA Category 1, 2, or 3 land uses (**Table VI-41**). No vibration levels high enough to damage buildings are estimated from operations, including fragile historic buildings.

Levels under Alternative 3A due to ground-borne noise from train passbys are predicted to exceed the FTA *frequent* impact criteria at 156 residences and other FTA Category 2 land-uses (**Table VI-42**). No exceedances of the FTA ground-borne noise impact criteria are predicted at Category 3 land-uses (institutions) with Alternative 3A.

d. Alternative 3C

Impacts from Alternative 3C due to ground-borne vibration from train passbys are not predicted to exceed the FTA frequent impact criteria at FTA Category 1, 2, or 3 land uses (**Table VI-41**). No vibration levels high enough to damage buildings are estimated from operations, including fragile historic buildings.

Levels under Alternative 3C due to ground-borne noise from train passbys are predicted to exceed the FTA *frequent* impact criteria at 168 residences and other FTA Category 2 land-uses (**Table VI-42**). No exceedances of the FTA ground-borne noise impact criteria are predicted at Category 3 land-uses (institutions) with Alternative 3C.

3. Construction Vibration

Ground-borne vibration would be generated from construction activities from the Preferred Alternative (as well as Alternative 3A and 3C), with potential impacts on surrounding areas near the proposed portals and above the proposed tunnels. Tunnel boring machine (TBM) tunneling would be used to bore the four primary train tunnels. Drill and blast excavation would be used to construct cross-passages and ancillary underground structures. TBM tunneling and drill and blast excavation have been evaluated for a preliminary estimate of potential construction vibration impacts, and presented in this section. The assessment of construction vibration included in this section has been completed for the Preferred Alternative; however, it is not expected that construction vibrations from Alternative 3A or Alternative 3C would be substantially different from the Preferred Alternative.

a. Tunnel Boring Machine Vibration Assessment

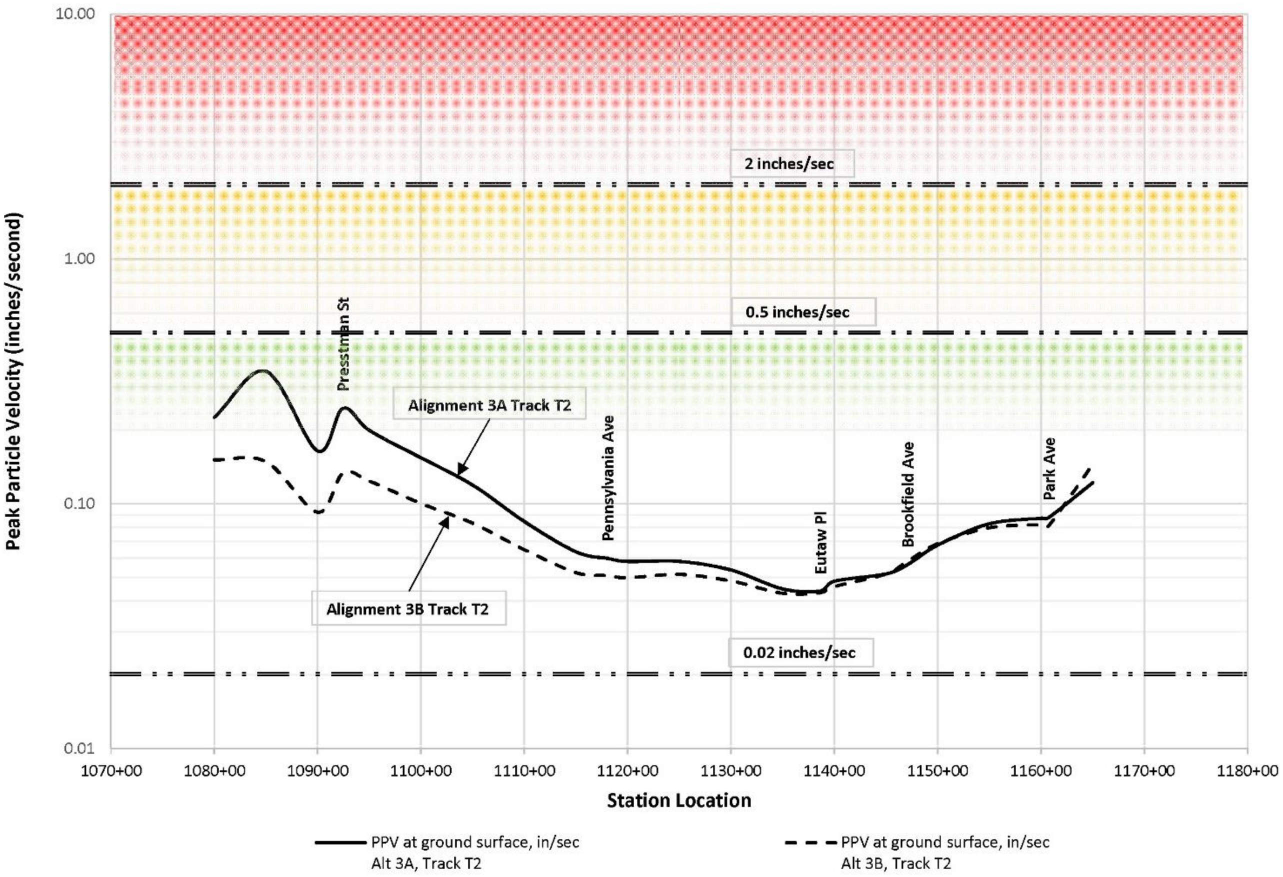
Ground-borne vibrations, which include those generated by TBM tunneling, are transmitted easier and further in hard-rock ground conditions. However, the on-site soils, due to their very dense consistency, have vibration transmitting characteristics close to those of rock. The soil deposit vibration transmission characteristics are essentially the same as rock, based on soil boring data collected for the Baltimore Red Line Project (FTA and MTA, 2012).

The TBM induced ground-borne vibrations attenuate with distance. Construction related ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second or millimeters (mm)/second. Damage potential (to structures) as well as disturbance to humans can be related to the Resultant PPV (RPPV) magnitude.

To estimate a vibration attenuation curve, one needs the distance between the source (the TBM) and the receptor (such as a surface structure). For the Preferred Alternative, the distance used is the distance from the TBM tunnel centerline to the ground surface (depth of the tunnel centerline below ground). The vibration attenuation is related to the ground conditions, which are estimated as similar to solid rock as explained above.

Figure VI-25 below presents the estimated PPV at ground surface resulting from TBM construction for the Preferred Alternative. Alternative 3A is included for comparison. Three reference points are shown on this logarithmic plot to help clarify the results. Two inches per second is the level at which potential damage to structures would likely occur. At 0.5 inches per second, old residential structures in poor condition would likely be damaged. Humans are able to sense vibration at approximately 0.02 inches per second. The results show that TBM vibrations during construction would generally be between 0.04 and 0.2 inches per second for the Preferred Alternative, and thus are not likely to risk damaging buildings near or above the proposed tunnels but would be perceptible to humans.

Figure VI-25: Estimated Vibration at Ground Surface from TBM Tunneling



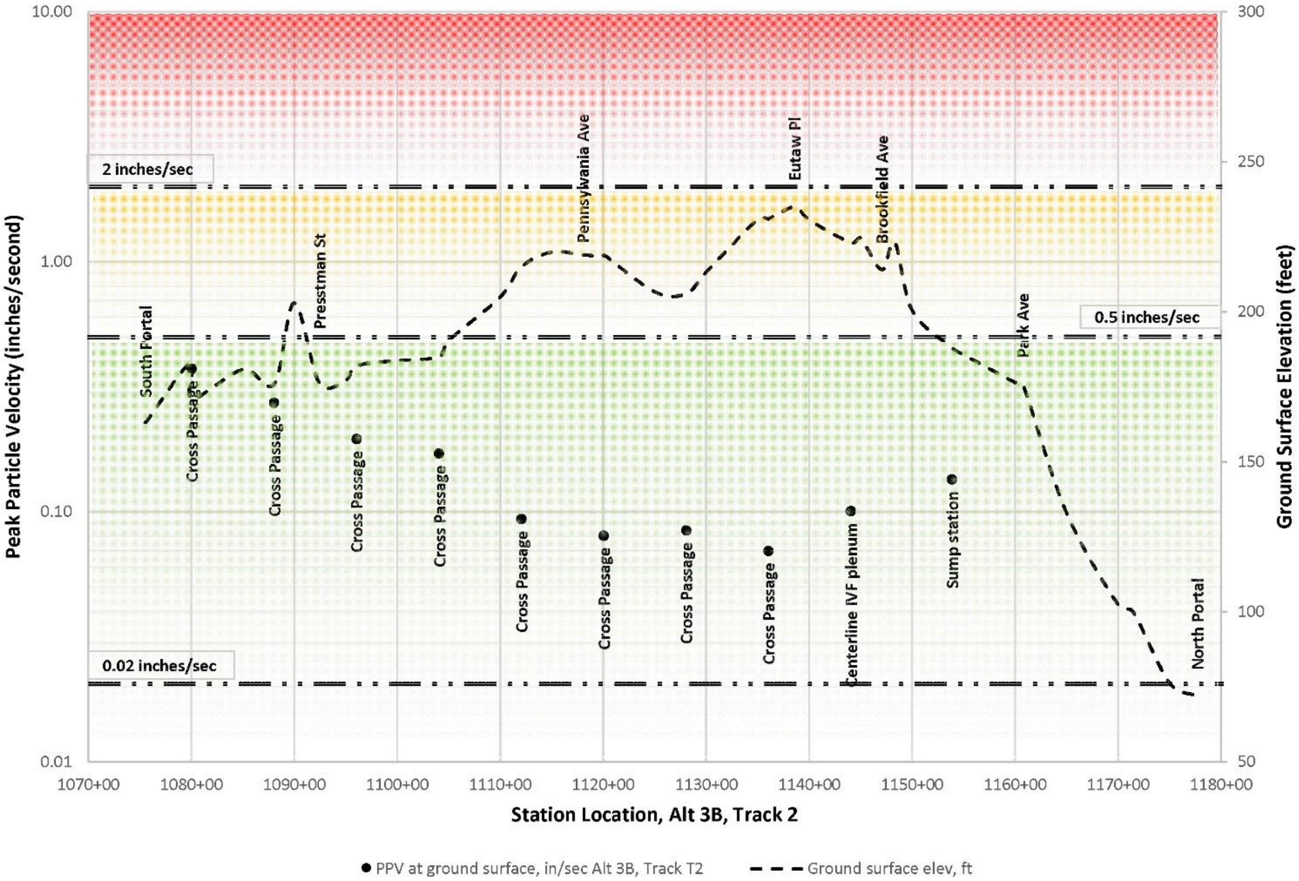
The results indicate that humans would likely be able to sense the vibration from most of the TBM tunneling. Observations show that TBMs closer than 150-160 feet away can be felt by humans, and a good portion of the Preferred Alternative alignment is at or less than this distance. However, the TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could compare the perceived vibrations to common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20-30 feet away from an observer.

b. Drill and Blast Tunnel Excavation

The potential vibration effects resulting from tunnel blasting for cross passages and ancillary underground structures was also assessed. Drill and blast tunnel excavation would be used for cross-passages located underground at 16 locations between the south portal and Intermediate Ventilation Facility, one sump station located underground between the Intermediate Ventilation Facility and the south portal, and the intermediate vent cavern, plenum, tunnel and shaft. The intermediate vent plenum would run underneath Jordan Street between approximately Ducatel Street and West North Avenue. In addition, there would be blasting for the egress cavern and tunnel, the North Ventilation Facility, and minor blasting at each portal area.

Current state-of-the-art “controlled blasting” will be specified in the tunnel construction contract, and thus has been assumed in these estimations. Controlled blasting, unlike TBM vibration, is a transient vibration. To control vibrations, the blast holes are fired in a sequential manner at small time intervals resulting in a “rumbling” vibration. In a large tunnel, this rumbling can be sensed for several seconds. The results of this analysis are presented in **Figure VI-26**. The PPV at ground surface in inches per second is depicted as black dots, with one dot per facility that would be constructed with drill and blast excavation under the Preferred Alternative. The continuous dashed line represents the ground surface elevation in feet. The analysis shows that blasting for the Preferred Alternative can be controlled to allow for reasonable advance of excavation activities while controlling vibration to a practical level. No vibration levels would exceed 0.5 inches per second, the level at which damage is likely to occur to old residential buildings in poor condition. The PPVs would generally range between 0.07 to 0.4 inches per second. The threshold for human perception is approximately 0.02 inches per second, however, such vibrations are likely to be barely perceptible.

Figure VI-26: Estimated Vibration at Ground Surface due to Blasting for the Preferred Alternative



c. Drill and Blast Shaft Excavation

The evaluation of blast-induced vibrations for shaft construction is complex and is anticipated to have the most impact to the public. One shaft would be located at the Intermediate Ventilation Facility, and one at the North Ventilation Facility. The magnitude of disturbance from vibrations depends on the construction sequencing and general configuration of the shaft and connecting tunnel. For blasting at shaft areas, both ground-borne vibrations and air overpressures were considered. Air overpressures are vibrations from pressure shock waves being transmitted by the atmosphere. Ground-borne vibrations are typically less disturbing and lower potential for damage during shaft excavation. However, overpressures pose more potential for disturbance when blasting for shafts.

It is anticipated that the distance to the closest adjacent building structures would typically be in the range of 100-200 feet since the immediate surrounding area of the shaft would be a working construction zone. Anticipated PPV vibration levels would be less than approximately 0.25 inches per second and thus below 0.5 inches per second, the typical threshold level of potential damage to historic structures.

Recorded data from past blasting activities in similar conditions can be used to estimate potential order of magnitude of air overpressures, measured in decibels (dB). Based on this data, sound levels could range from about 102 to 145 dB at adjacent structures, without considering potential mitigation measures. For the purpose of comparison, 100 dB is approximately like the overpressure from a motorcycle, and 145 dB would be roughly equivalent to a fire cracker. The latter value, 145 dB, is considered high for blasting; this would be representative of a poorly controlled blast and should be considered an exception rather than typical.

4. Mitigation

Since exceedances of the FTA impact criteria are predicted for the project alternatives, candidate mitigation measures have been identified for operational ground-borne noise. The vibration control measures to mitigate the ground-borne noise impacts predicted by modeling will to be developed during final design. Factors such as the level of impact, cost, and effectiveness of mitigation measures will be considered in determining measures that will be included in the project. All vibration control measures would need to be evaluated in more detail during final design when the track alignments are finalized. Additionally, ground propagation characteristics determined through field measurements would also be required to accurately evaluate the various control measures considered. **Table VI-43** provides a list of potential mitigation measures, the approximate vibration reduction potential, and estimated cost.

Table VI-43: Potential Operational Mitigation Measures

Mitigation Measures	Approximate Vibration Reduction Potential	Approximate Cost
Resilient Fastener	5-10 VdB	$300 per track foot
Ballast Mats	10-15 VdB	$180 per track foot
Resiliently Supported Ties	10-15 VdB	$400 per track foot
Floating Slab Track	15-20 VdB	$600 per track foot
Rail Vibration Absorbers	3-5 VdB	$40 per track foot
Rail Vibration Dampers	3-5 VdB	$40 per track foot

The Project will include development of a Construction Vibration Mitigation Plan during the final design phase in order to mitigate for construction vibrations. The plan will include the following measures where practicable:

- Use controlled blasting construction for vibration mitigation during drill and blast and utilize blast covers when applicable. Test blasting and monitoring of blasting for noise and vibrations at sensitive nearby structures will be implemented.
- Implement contractor control measures to ensure vibration from TBM is kept low enough to avoid damaging historic buildings and remains below applicable FTA impact criteria.
- Implement vibration monitoring program and pre-survey of buildings in tunneling and blasting areas.

K. Energy

1. Alternative 1: No-Build

Alternative 1 would continue operation of the B&P Tunnel at current service levels with no major changes. Therefore, energy consumption from the use of fuel and electricity by trains and/or for the operation of the B&P Tunnel would not change under this alternative. Also, no new construction would occur that would potentially consume more energy. Ongoing maintenance on the tunnel would become more intensive as the tunnel ages, potentially requiring increased energy consumption.

2. Preferred Alternative

Table VI-44 provides the estimated future daily energy consumption of Amtrak and MARC trains for the Preferred Alternative based on statistics provided by Amtrak, the US Department of Energy (DOE), and the number of daily passenger trips forecasted by the NEC FUTURE Program to 2040 (Alternatives 3A and 3C are shown for comparison). This estimate uses current Btu-per-passenger-mile data in the calculations; future gains in efficiencies would be speculative. As shown in the table, daily energy consumption by Amtrak and MARC trains in terms of Btu-per-passenger-mile would increase from existing levels due to the increased capacity the Preferred Alternative would support and the longer travel distance. The primary factor that differentiates the alternatives in this analysis is the length of travel; Alternative 3A and Alternative 3B would be roughly identical in their length of travel and are presented together in the table.

Although energy consumption would increase under the Preferred Alternative, the forecasted increase in daily passenger trips includes passengers diverted from other, less energy efficient modes of travel, such as single-occupant automobiles. However, these potential diversions from less energy efficient modes of travel are speculative.

The number of forecasted daily freight trains traveling through the new B&P Tunnel is not expected to increase under the Preferred Alternative; therefore, no change in energy consumption by freight in the Study Area would occur.

Table VI-44: Maximum Estimated 2040 Amtrak and MARC Service Energy Consumption in the Study Area

Alternative	Type of Service	Daily Passenger Trips[2]	Length of Travel (Miles)	Daily Passenger Miles	Average Btu Per Passenger-Mile[3]	Daily Estimated Energy Consumption (Btu)	Percent Difference from Existing Daily Energy Consumption
Preferred Alternative and Alternative 3A	Amtrak	55,800	3.7	206,460	2,214[4]	457,102,440	247%
	MARC	11,800	3.7	43,660	2,838[5]	123,907,080	228%
Alternative 3C	Amtrak	55,800	3.8	212,040	2,214[4]	469,456,560	256%
	MARC	11,800	3.8	44,840	2,838[5]	127,255,920	237%

Source: Baltimore Penn Station Master Plan (Amtrak, 2015)*, NEC FUTURE Program* (USDOT, Accessed September 8, 2014)*, and Transportation Energy Data Book* (USDOE, 2014).

[1] *Maximum estimate is based on NEC FUTURE Program B (medium level of service) because higher service level alternatives propose a new high speed route through Baltimore, resulting in lower traffic through the B&P Tunnel*

[2] *NEC FUTURE Program 2040 forecast data.*

[3] *Average Btu per passenger-miles are the most current available data estimates, not forecasted to 2040.*

[4] *2014 Amtrak data.*

[5] *2012 commuter rail data*

Construction of the Preferred Alternative would require additional energy use beyond what would be used for normal operations. This additional energy would be consumed on a short-term basis as required for construction of the new tunnel, associated trackwork, and intersecting roadways modifications. In the long-term, energy consumption to operate the new tunnel may increase as well. Overall, once the Preferred Alternative becomes operational, long-term energy savings are expected from more efficient operations.

3. Alternative 3A

The primary factor that differentiates the alternatives in this analysis is the length of travel; Alternative 3A and The Preferred Alternative would be roughly identical in their length of travel, as shown in **Table VI-44**.

4. Alternative 3C

Alternative 3C would have a slightly longer length of travel, and would therefore require additional energy for Amtrak and MARC service compared to the Preferred Alternative or Alternative 3A as shown in **Table VI-44**.

L. Construction

This section is intended as a general overview of temporary project-related construction impacts and potential mitigation measures that could be considered. Temporary impacts from the construction process to the individual resources described in this FEIS are included under each resource in **Chapter VI**.

1. Impacts

a. Alternative 1: No-Build

Alternative 1: No-Build would not implement major improvements to the existing B&P Tunnel. Construction activities associated with ongoing maintenance of the tunnel would have localized effects such as noise, dust and vibration from construction equipment and potential temporary interruptions to vehicular and pedestrian traffic. It is expected that, as the existing tunnel continues to age, maintenance activities would become more frequent and/or intensive.

b. Preferred Alternative

Construction of the main tunnel bores for the Preferred Alternative would primarily involve horizontal mining with a tunnel boring machine (TBM). The outside approaches and portal areas would be built with a combination of trench cutting and cut-and-cover construction techniques. Cut-and-cover construction requires removal of everything on the surface above the planned tunnel, and excavating a trench; in which the tunnel structure is constructed and then covered, restoring the ground cover. After excavation, the trench would be covered with fill material. Ancillary structures such as cross passages, egress passage, and shafts would be constructed using drill and blast excavation.

Horizontal excavation by mining involves boring at a portal where the alignment would transition from surface to underground and excavating horizontally; surface disturbance would only occur at the approaches to the portals on either end of the tunnel and for ancillary structures like ventilation facilities. These ancillary structures could be mined in a combination of mechanical excavation and controlled blasting.

Construction impacts associated with construction of the Preferred Alternative would include localized impacts at the mucking shaft and portal cut-and-cover locations, emissions and dust from construction vehicles, blasting noise and vibration near tunnel portal and ventilation shaft locations, temporary interruptions to vehicular and pedestrian traffic, temporary loss of on-street parking, and major utility relocations. Demolition of buildings, clearing land, and other construction activities could displace and increase activity from urban rodents, including rats.

Tunnels are typically constructed from one portal location, known as the "mucking shaft" through to the far portal. The mucking shaft is the scene of the most visible tunnel activity, as it is the passageway through which the excavated material (muck) is removed and the tunnel lining segments and construction materials enter. The mucking shaft will require a laydown and staging area. It is not yet known how large of a staging area is required, but several acres or more could be required.

Construction staging areas for the Preferred Alternative would be located adjacent to the north portal, south portal, and ventilation facilities. Construction staging areas would include facilities such as materials storage and lay down areas, water treatment, parking, power generation, offices, and others. Construction staging for the south portal and south ventilation facility would be primarily to the east and west of the proposed trench and cut-and-cover areas, within the limits-of-disturbance and existing Amtrak right-of-way. At the Intermediate Ventilation Facility, construction staging would be confined to the site limits identified in **Chapter IV**. The north portal construction staging area would be located between the existing light rail tracks and the Jones Falls waterway, in the vicinity of the North Avenue, Howard Street, and CSX Bridges over Jones Falls. Construction staging for the north ventilation facility would occur within the I-83 loop ramp area, currently in use as a BCDOT facility.

Construction activities would result in temporary interruptions to both vehicular and pedestrian traffic patterns, including temporary closure of roads and sidewalks. During various stages of construction, additional traffic would be generated by hauling of construction debris, excavation spoils and building materials. Increased traffic, noise, and vehicular emissions along waste hauling routes would likely occur as the muck material is trucked to appropriate waste facilities (as described in **Section VI.G**). The truck haul routes for the south portal construction area would run along Monroe, Pulaski, Payson, Lanvale, and Brice streets in order to connect the south portal construction staging areas to US 40. At the north portal and north ventilation facility construction area, trucks would utilize Falls Road, North Charles Street, Maryland Avenue, and West North Avenue in order to access I-83. Truck haul routes for the Intermediate Ventilation Facility would utilize Linden Avenue and West North Avenue to access I-83. Frequency of trips or waste destinations are not yet known at this phase of the project.

c. Alternative 3A

Construction impacts from Alternative 3A would be largely similar to that of the Preferred Alternative as described above, differing primarily in the location of the south portal. Construction of the tunnel bores, portals, approach tracks, and ancillary structures would be undertaken in the same manner as the Preferred Alternative. Construction impacts associated with construction of the Alternative 3A would include localized impacts at the mucking shaft and portal cut-and-cover locations, emissions and dust from construction vehicles, blasting noise and vibration near tunnel portal and ventilation shaft locations, temporary interruptions to vehicular and pedestrian traffic, temporary loss of on-street parking, and major utility relocations. Demolition of buildings, clearing land, and other construction activities could displace and increase activity from urban rodents, including rats.

Construction activities would result in temporary interruptions to both vehicular and pedestrian traffic patterns, including temporary closure of roads and sidewalks. During various stages of construction, additional traffic would be generated by hauling of construction debris, excavation spoils and building materials. Increased traffic, noise, and vehicular emissions along waste hauling routes would likely occur as the muck material is trucked to appropriate waste facilities. Construction staging areas and truck haul routes have not been determined for Alternative 3A at this stage.

d. Alternative 3C

Construction impacts from Alternative 3C would be largely similar to that of the Preferred Alternative as described above, differing primarily in the location of the south portal. Construction of the tunnel bores, portals, approach tracks, and ancillary structures would be undertaken in the same manner as the Preferred Alternative.

Construction impacts associated with construction of the Alternative 3C would include localized impacts at the mucking shaft and portal cut-and-cover locations, emissions and dust from construction vehicles, blasting noise and vibration near tunnel portal and ventilation shaft locations, temporary interruptions to vehicular and pedestrian traffic, temporary loss of on-street parking, and major utility relocations. Demolition of buildings, clearing land, and other construction activities could displace and increase activity from urban rodents, including rats.

Construction activities would result in temporary interruptions to both vehicular and pedestrian traffic patterns, including temporary closure of roads and sidewalks. During various stages of construction, additional traffic would be generated by hauling of construction debris, excavation spoils and building materials. Increased traffic, noise, and vehicular emissions along waste hauling routes would likely occur as the muck material is trucked to appropriate waste facilities. Construction staging areas and truck haul routes have not been fully determined for Alternative 3C at this stage.

2. Mitigation

The Project includes the following mitigation measures that correspond with construction impacts. Although the following measures correspond with the Preferred Alternative, similar measures would be appropriate to mitigate impacts of Alternative 3A and Alternative 3C. These mitigation measures would be refined and developed in further detail during the final design phase.

a. Noise

Measures that can be used to lessen construction noise fall into two general categories: design considerations and construction staging and/or sequencing of operations. Design considerations could potentially include erection of temporary walls or earth berms between the noise source and the sensitive receptor, the identification of haul routes that avoid sensitive receptors to the maximum extent possible, and location of stationary noise generating equipment at a distance from sensitive receptors.

To mitigate construction noise resulting from the Preferred Alternative, a Construction Noise Mitigation Plan will be developed during the final design phase. The plan will provide for the following to the extent practicable:

- Location of construction equipment and material staging areas away from sensitive receptors;
- Temporary noise barriers and advanced construction of permanent barriers to serve during construction; and
- Routing of construction traffic and haul routes along roads in non-noise sensitive areas.

b. Air Quality

The Preferred Alternative includes development and implementation of a Construction Emission Reduction Plan to include measures such as reducing equipment idling times, utilizing on-site storage to reduce truck haul trips, using low-emissions equipment, dust suppression measures, ensuring the contractor has knowledge of appropriate fugitive dust and equipment exhaust controls, and other measures.

Dust control measures will be in conformance with COMAR 26.11.06.03D pertaining to Particulate Matter from Materials Handling and Construction and may include application of water and calcium chloride to haul roads, provision of truck wheel wash stands, minimization of exposed, erosion prone areas to the greatest extent possible; stabilization of exposed earth with grass, geotextile fabric, ground cover, paving, or other finished surface as easily as possible; and covering or shielding stockpiled materials from wind.

c. Vibration

Construction activities can result in varying degrees of ground vibration that diminish in strength with distance. Construction activities that typically generate the most severe vibrations are impact pile driving and blasting. Smaller, less perceptible vibrations will also occur in tunneling. The Preferred Alternative includes development of a Construction Vibration Mitigation Plan to include the following measures:

- Use of controlled blasting construction methods for vibration mitigation during drill and blast, and use of blast covers when applicable;
- Implementation of contractor control measures to ensure vibration from TBM is kept low enough to avoid damaging historic buildings and remains below applicable FTA impact criteria; and
- Implementation of a vibration monitoring program and pre-surveying of buildings in tunneling and blasting areas.

d. Transportation

The Preferred Alternative includes development and implementation of a Maintenance of Traffic Plan which provides protection for safe pedestrian, bicycle, and vehicular movement around work sites during construction and maintains connectivity and access where possible. The plan will account for truck haul routes, construction traffic concerns, and will help to minimize transportation impacts during construction. The plan will account for community resources such as schools and parks.

e. Hazardous Materials

The Preferred Alternative includes development and implementation of a Hazardous Spill Prevention Plan to mitigate the potential for accidental release of hazardous materials during construction. The Preferred Alternative also includes development of a Hazardous Materials Remediation Plan, and a Screening and Materials Handling Plan for pumping, segregation, transportation, and disposal of groundwater. Similarly, the Preferred Alternative includes implementation of a program for the identification and segregation of impacted soils for additional testing and offsite disposal. Evaluation of any soil or groundwater screening and sampling results by an environmental professional will determine health and safety, handling, and offsite disposal requirements.

f. Natural Resources

The Preferred Alternative includes development and implementation of an E&S Control Plan for construction activities, in coordination with MDE and the City of Baltimore. The plan will be developed during the final design phase.

The Preferred Alternative includes development and implementation of a Rodent Abatement Plan to be written into contract specifications for construction. The plan will account for and mitigate potential disturbance to rodents such as rats that may cause mobilization during construction.

The Preferred Alternative includes development and implementation of a Stormwater Management Plan in accordance with MDE guidelines. The plan will focus on stormwater runoff associated with construction activities and surface impacts, both during and after construction, throughout the study area.

g. Public Notification

FRA will work with communities to minimize potential community effects during construction. Appropriate signing, the project website, and other means will be used to notify motorists of road closures and detours and pedestrians of sidewalk closures and detours. Particular attention will be given to maintaining public safety during the construction period; public access to construction areas will be limited to the greatest extent possible.

The Preferred Alternative will include utilization of public information and feedback methods such as construction-alert publications and complaint hotlines to handle complaints and keep the public informed. Notifications will include information about construction schedules, road closures, transit service impacts, blasting, and contact information.

M. Indirect and Cumulative Impacts

1. Regulatory Requirements

The CEQ regulations set forth in 40 CFR § 1500 et. Seq., require federal agencies to also consider the potential for indirect and cumulative effects (ICE) from a proposed project. The terms “effects” and “impacts” are considered synonymous, as used in the CEQ regulations. The CEQ regulations define the impacts and effects that must be addressed and considered to meet NEPA requirements, as follows:

- Direct effects are caused by the action and occur at the same time and place (40 CFR § 1508.8(a))
- Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR § 1508.8(b)).
- Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.7).

2. Methodology

The ICE analysis was completed using available information on past, present and foreseeable future development, as well as readily available data from published plans and studies. Information was obtained from the Baltimore City Planning Department and the Baltimore Development Corporation.

A combination of analysis methodologies was employed to assess indirect and cumulative effects. The analyses were based on readily available information and data including:

- Trend Analysis: historic data were collected to understand past events and patterns, as well as the rates at which effects occurred, and projected data consulted to assess anticipated development or other trends and changes that could have future effects on the resources assessed
- Transportation and Community Planning: existing planning documents of transportation agencies and communities within the analysis area were consulted to identify future planned projects, community visions for their future, and potential impacts to planned actions
- Map Overlays: mapping layers were compiled to identify a reasonable and foreseeable future land use scenario

The ICE analysis includes the identification of resources of interest and establishment of the geographic boundary and temporal boundary (time frame) for the analysis. Analysis includes determination of past, present and reasonably foreseeable future actions and analysis of indirect and cumulative effects to resources from evaluated alternatives within the defined temporal and geographic boundaries.

3. Resources to Be Evaluated

All resources included in the 1999 FRA *Procedures for Considering Environmental Impacts* have been considered as part of this ICE analysis. Those resources impacted directly by the build alternatives, as described throughout **Chapter VI**, form the basis for the analysis. Although considered, biodiversity areas, Special Protected Areas, protected species, wetlands, sole source aquifers, groundwater, wild and scenic rivers, and agriculture are not included in the analysis because these resources are not present in the analysis area and there are no direct effects to these resources.

4. Geographic Boundary

The indirect and cumulative effects analysis geographic boundary was developed using the boundaries of environmental resources and socioeconomic units that would be directly and indirectly impacted by the B&P Tunnel Project (**Figure VI-27**). The ICE analysis Study Area is identical to the Study Area used for Socio-Economic and Environmental Justice assessments, as described in **Section V.A** and **Section VI.A**, and extends from the Gwynns Falls Bridge to the west, the Barclay-Midway-Old Goucher neighborhoods to the east, Druid Lake to the north, and West Baltimore Street and US 40 to the south.

5. Temporal Boundary

The temporal boundaries for the ICE analysis generally extend from approximately 1970 to 2040. The past time frame was selected based on available census and land use data, development trends, and population trends. Population in the city historically peaked post-war in the 1950's (MDP, 2010). The city's population decreased 33 percent between 1970 and 2010, then increased approximately 4.2 percent by 2013 to 622,104. Population is projected to increase 5.0 percent from 2010 to 2040 (MDP, 2010; US Census Bureau, Accessed 2014).

The 2040 end year for the analysis is based on projections of population, households, and employment in the analysis area endorsed by the Baltimore Metropolitan Council (Cooperative Forecasting Group, 2014) and long-range transportation plans extending to 2040. This period encompasses the anticipated construction and beginning operation of the selected alternative. Actions intended for a time beyond 2040 are not considered reasonably foreseeable.

6. Land Use and Zoning

a. Existing Land Use

Existing land use in the ICE analysis area has been evaluated using aerial mapping, readily available Baltimore City land use data, and field reconnaissance. The analysis area (approximately 2,600 acres) comprises about five percent of Baltimore City. Current land uses in the ICE analysis area are primarily residential (49%), followed in area by institutional (14%), transportation-related (11%), parks/open space (10%), commercial (8%), industrial (7%) and mixed (1%).

b. Zoning

The Baltimore City zoning code was last comprehensively updated in 1971. At that time, the focus was on automobile-oriented development, separation of uses, and preserving the city's heavy manufacturing base. Baltimore City has recently initiated the first substantial zoning changes since the last effort 44 years ago. Overall goals are to promote pedestrian-oriented, mixed-use development, allow for the creative and flexible reuse of older buildings, encourage campus master planning, and to protect open space. The new code has design standards to improve the quality of Baltimore's built environment, which would restrict building materials while allowing for modern approaches to building design, and creating specific architectural guidelines to maintain the unique character of the older areas of the city. The city is currently eliciting public comment on the new draft zoning code.

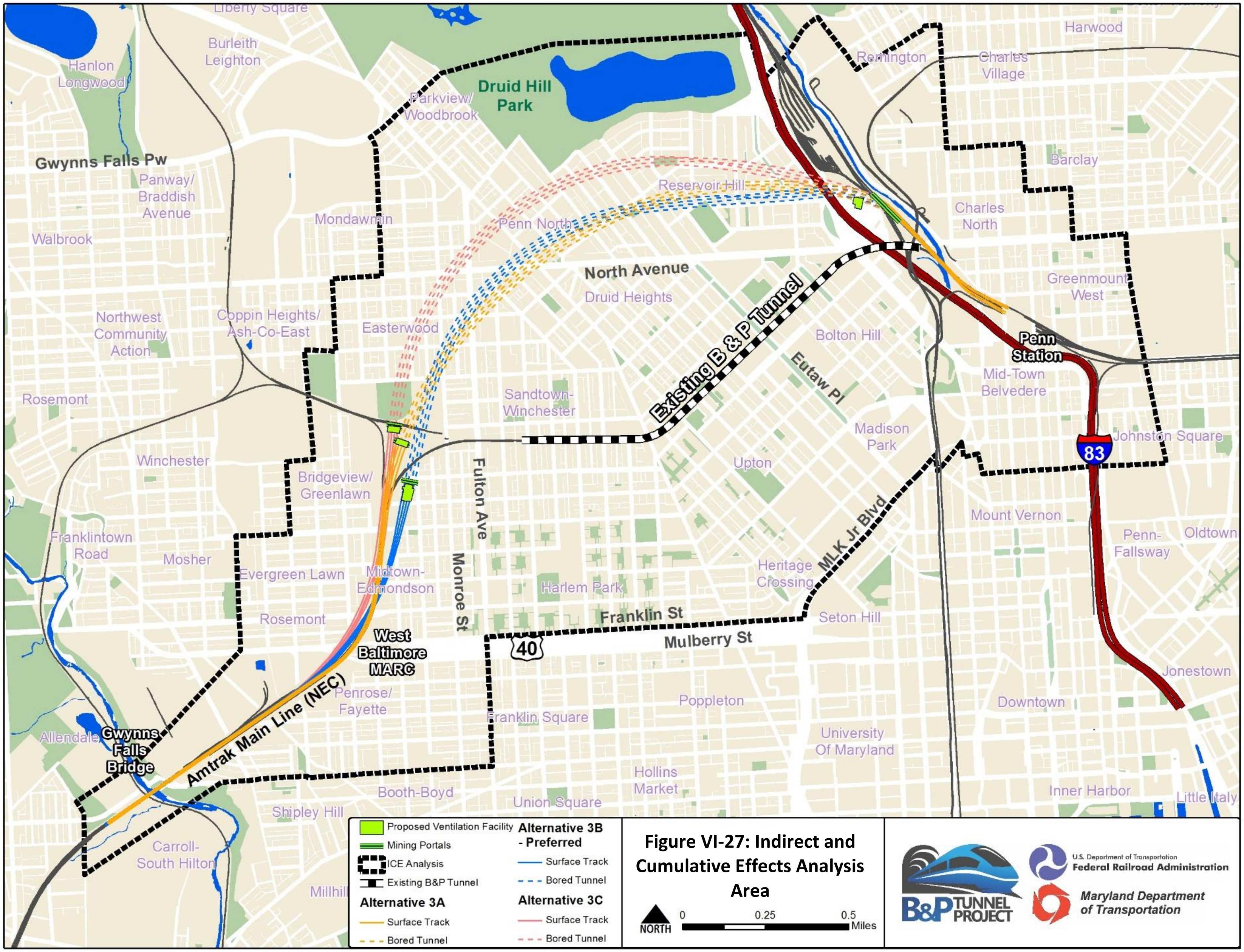


Figure VI-27: Indirect and Cumulative Effects Analysis Area

Existing zoning in the analysis area is generally consistent with current land use. Analysis area zoning is comparable to citywide zoning in most categories, except proportionately more properties are zoned community businesses, central commercial, community commercial, and as office-residences (Baltimore City, 2008). Substantially less acreage is zoned industrial in the analysis area compared to citywide. Existing right-of-way for the B&P Tunnel and approach tracks are zoned as industrial or are an approved conditional use through other zones such as residential and commercial areas.

7. Planning

a. Community Planning

Completed in 2009, Baltimore City's most recent Comprehensive Master Plan emphasizes directing compatible growth to suitable areas that promote mixed uses, nodal activity centers and access to multiple modes of transit. It provides the policies and guidance to encourage development, infill and redevelopment that is transit oriented and brings vacant areas back into productive use. The principal method to implement these changes discussed by the plan is updating the city's zoning code, currently underway.

In the ICE analysis area there are seven Area Master Plans that implement the Comprehensive Plan goals tailored to their individual communities. Common to the Area Master Plans is the desire to create vibrant, mixed use communities that encourage new growth on vacant lands but is respectful of existing land uses and the historic character of neighborhoods, and reduction of industrial uses incompatible with residential areas. The seven Area Master Plans included in this analysis are:

- Operation Reach Out Southwest (2002)
- Barclay-Midway-Old Goucher (2005)
- Upton (2005)
- Penn North (2006)
- West Baltimore MARC Station (2008)
- Greater Rosemont and Mondawmin (2012)
- Mount Vernon (2013)

The NEC FUTURE Program is FRA's comprehensive planning effort to define, evaluate, and prioritize future investments in the NEC, from Washington, DC, to Boston. Through the NEC FUTURE Program, FRA will determine a long-term vision and investment program for the NEC that addresses current and future rail passenger service needs and considers the appropriate role of passenger rail within the larger transportation system of the region. Outcomes of NEC FUTURE include the release, in 2016, of a Tier 1 EIS and Service Development Plan in 2017 to support the selected vision. FRA considered the corridor-wide service requirements of NEC FUTURE alternatives related to the B&P Tunnel project. As a preferred alternative has not yet been identified for NEC FUTURE, FRA has not included it in this cumulative impact assessment for the B&P Tunnel project.

b. Transportation Planning

Several comprehensive transportation plans and supportive studies evaluating the state of current transportation infrastructure and capital needs have been completed that address needs in the ICE analysis area. **Table VI-45** summarizes the most relevant recent plans. A common theme of the plans is the challenge of initiating projects addressing longer term needs in light of current and projected budget constraints, and the major investments needed to achieve a state of good repair of existing infrastructure.

Table VI-45: Transportation Plans Encompassing the ICE Analysis Area

Plan	Agency	Description
NEC Infrastructure Master Plan 2010	Amtrak	Anticipating a 60% increase in commuter trips by 2030, the plan identifies $52 billion in investments to cover system repair, upgrades, and capacity increases.
2011 - Plan It 2035	Baltimore Regional Transportation Board	The region's long-range transportation plan for the years 2016 to 2035. Identifies $11.5 billion worth of projects to expand the region’s transportation system. This includes $6.7 billion for new and improved highways, $4.3 billion for expanded transit service, and $93 million for new and improved bicycle/pedestrian facilities.
The Amtrak Vision for the Northeast Corridor 2012 Update Report	Amtrak	The plan outlines recent actions and initiatives taken by Amtrak and others since the 2010 Master Plan. It supports the FRA NEC FUTURE Passenger Rail Corridor Investment Plan EIS currently being prepared. The plan would invest $151 billion from 2012-2040 using a phased approach.
2013 Critical Infrastructure Needs of the Northeast Corridor	NEC Infrastructure Operations Advisory Commission	The report identifies priority needs along the NEC. Proposed projects in Baltimore include BWI Marshall Airport Station improvements and a 4th track, the B&P Tunnel, and improvements at Baltimore Penn Station.
MARC Growth and Investment Plan 2013	Maryland Transit Administration	This multi-phased, multi-year plan aims to triple the capacity of MARC. Goals include support of multi-modal access, improved parking along Penn Line stations, enhancing bike/pedestrian access, and a new Penn Line maintenance facility.
NEC FUTURE - A Rail Investment Plan for the NEC	Federal Railroad Administration	Initiated in 2012, its goal is to develop a comprehensive long-term vision to guide investment in the NEC. A Tier 1 Programmatic Environmental Impact Statement and Service Development Plan are underway to be completed in 2016.
2035 Maryland Transportation Plan—Moving Maryland Forward (2015)	Maryland Department of Transportation	This plan outlines the transportation strategies to achieve broad transportation improvement goals by 2035. In the analysis area the strategies identified include MARC improvements, completion of the Red Line light rail service (which has since been canceled), addressing congestion on I-83, and investing in multimodal transportation capacity to support State designated TOD areas such as State Center.
AMTRAK FY 2014 Budget and Business Plan, FY2015 Budget Request Justification, FY2014-2018 Five Year Financial Plan	Amtrak	Presents the goals and strategies to implement its program from FY 2014-2018. The five-year financial plan estimates approximately $6.2 billion in capital investments in the NEC.
Maximize 2040 (in development)	Baltimore Regional Transportation Board	Currently in development, this long range plan would address transportation goals in the Baltimore region until 2040. Preliminary goals center on improving safety, improve and maintain the existing infrastructure, improve accessibility, increase mobility, conserve and enhance the environment, improve security, and promote prosperity and economic opportunity, among others.

8. Past, Present and Reasonably Foreseeable Projects

a. Past Projects

The B&P Tunnel was opened in 1873, approximately 144 years after the founding of Baltimore. Baltimore Penn Station was constructed in Jones Falls Valley in 1911 to serve the Pennsylvania Railroad. The Jones Falls Expressway (I-83) was conceived in the 1940's, and after many iterations to reduce its impacts to industry in the Jones Falls Valley and connect to other proposed interstates in the city, was constructed through the analysis area in 1961-1962.

The project to extend I-70 into the Baltimore City, dating back to the 1960s, was completed between Pulaski Street and Martin Luther King Jr. Boulevard along the Franklin—Mulberry corridor. Located along the southern margins of the analysis area, this highway now known as US 40 still functions as a highway but was never connected as planned and did not become part of the interstate system.

By 1976 Amtrak owned most of the NEC extending between Washington, D.C. to Boston. In 1978, Amtrak began running the Chesapeake commuter train on what is the NEC alignment today, which stopped at Edmonson Avenue. MARC took over the route as far as Perryville with a stop at the West Baltimore MARC Station on Franklin Street in 1983. In 1987, the Baltimore Metro was built through Upton, Penn North, and Mondawmin in the analysis area, extending to Owings Mills northwest of the city. Light Rail from Timonium to Glen Burnie opened in 1992, extending along North Howard Street through Midtown and Bolton Hill in the analysis area. Today, Baltimore Penn Station serves Amtrak, MARC, and the light rail systems. The West Baltimore MARC Station serves MARC trains only.

The West Baltimore MARC Station Parking Expansion and Enhancements Project was completed in 2014. The project expanded parking at the West Baltimore MARC Station, reconnected Payson Street to the street grid, and improved the US 40 highway entrances and exits. The project was also designed to enable future development and community open space.

b. Present Projects

Planned improvements and developments within the ICE analysis area are used to qualitatively analyze potential for indirect and cumulative effects. Present projects are those currently underway or planned to occur in the next five years (2015-2020). Planned improvements evaluated include:

- Ongoing development of transit service
- Planned roadway improvements
- Planned bicycle and pedestrian improvements
- Planned development and municipal capital improvements
- Demolition of vacant properties

Forty development projects and 13 transportation projects were identified from available sources such as agency websites and published plans. One major project recently announced, known as Project CORE (Creating Opportunities for Renewal and Enterprise) will demolish substantial amounts of vacant, blighted housing including buildings in close proximity to the Preferred Alternative. Projects underway include the Franklin Entrepreneurial and Apprenticeship Center located at 2118 Madison Avenue, and the $51 million Remington Row Planned Unit Development (PUD) project providing new office, retail and residential space at 2700 Remington Avenue. In general, the development projects identified include retail, office, housing, institutional, and mixed-use developments. Numerous building renovation, rehabilitation, and demolition projects are also planned in the ICE analysis area. Revitalization programs such as the Baltimore Innovation Village are currently active in the ICE analysis area. Transportation projects identified generally include roadway resurfacing, sidewalk repair, storm drain improvements, and intersection improvements.

c. Future Projects

Reasonably foreseeable future projects within the ICE analysis boundary have been gathered from the long range planning document, *Plan It 2035*, adopted by the Baltimore Metropolitan Council in November 2011. *Plan It 2035* was developed with local, state, and federal transportation agencies, area business leaders, community advocates and other stakeholders. No specific projects are identified within the analysis boundaries, however; the plan generally indicates improvements to facilities throughout the MARC system and bicycle/pedestrian access to rail transit stations are priorities (including West Baltimore MARC). In addition, the Maryland Department of Transportation *2035 Moving Maryland Forward* plan prioritizes Red Line light rail service (which has since been canceled), addressing congestion on I-83, and investing in multimodal transportation capacity to support state-designated transit-oriented development, such as at State Center in the analysis area.

A federal grant was recently approved for the BaltimoreLink North Avenue Rising project which is planned under City and State initiative to include dedicated bus lanes, bike facilities, transit station enhancements, bus stops, sidewalks, streetscaping, and re-paving along North Avenue within the ICE Study Area.

Specific future development projects by private industry and Baltimore City are not reasonably foreseeable as these entities have not produced long range plans. However, the Baltimore City Comprehensive Master Plan and Area Plans, as well as the *West Baltimore MARC Transit-Centered Community Development Strategy* outline the goals of individual communities for their growth and development, and are indicators of potential future projects if supporting conditions are realized.

While no final plans are in place to establish a double-stack (Plate H) freight corridor through Baltimore City, either by CSX, NS, or others, it is reasonably foreseeable that future efforts would be made to establish one. A stated objective of *Baltimore's Railroad Network* study (FRA and MDOT, 2011) is "Provide tri-level auto carrier clearance (Plate H) routes through Baltimore for both NS and CSXT freight trains." It is considered highly desirable by freight rail carriers to connect the Port of Baltimore with inland markets via a double-stacked Baltimore freight line. Both NS and CSX have expressed interest in the B&P Tunnel Project; correspondence from both railroads is provided in **Appendix B**.

Double-stack cargo trains are trains that include flat-bed trailers on each of which are stacked two semi-trailer trucks, one on top of the other. These trains are approximately five feet taller than normal freight trains (20'-3" tall vehicles, 26'-9" including catenary clearance), and therefore require five feet more vertical clearance than normal rail equipment to the underside of bridges, overpasses, signal trusses, and other infrastructure that spans the rail right of way in order to use the tracks.

In 2016, CSX Transportation and MDOT completed a feasibility study, and announced a plan to add additional clearance to the Howard Street tunnel to allow CSX to route double-stack trains through its existing mainline through Baltimore. The feasibility study found it is possible to modify the tunnel without full replacement to achieve the required clearance. The CSX mainline is currently a separate route from the NEC through Baltimore with no direct connection. The scope of work for the project consists of two components: 1) modifications to the floor and ceiling of the Howard Street Tunnel to increase its vertical clearance, and 2) track lowering and bridge modifications at ten overhead bridges located between the Howard Street Tunnel and the Port of Baltimore's Seagirt Marine Terminal to increase the vertical clearance. CSX and MDOT are currently seeking a $155 million grant for the Howard Street Tunnel through the 2016 Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) grant program. If full funding can be secured, MDOT and CSX anticipate the project can be completed in 2023.

The NEC does not feature sufficient vertical clearance to allow double-stack operation in most places, as most of the bridges and spanning infrastructure was built before double-stack train systems were invented, and can only accommodate railroad equipment of normal height. Therefore, before double-stack trains can operate through the B&P Tunnel, many nearby bridges, tunnels, and signal trusses north and south of the tunnel – as well as the station mezzanine and platform canopies at and the underpasses beneath the streets and Union Tunnel surrounding Baltimore Penn Station – would have to be raised at significant cost. Therefore, while the proposed B&P Tunnels themselves will be tall enough to accommodate double-stack trains, virtually none of the trackage north or south of the tunnel in the vicinity of Baltimore can accommodate the extra height, and, without additional investment in the hundreds of millions of dollars, it is unlikely that double-stack trains will operate through Baltimore on the Northeast Corridor in the near future. Any potential freight corridor improvements, if they were to move forward, would be completed wholly independently of the B&P Tunnel Project.

9. Indirect Effects

Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR § 1508.8).

Under Alternative 1: No-Build, no major improvements to the existing B&P Tunnel would occur and routine maintenance would continue. Indirect effects could potentially occur to the local economy and transportation system if more frequent and intensive maintenance work is required to keep the existing B&P Tunnel in service, resulting in potential delays or service interruptions along the NEC. No other known indirect effects to any of the resources evaluated would occur from Alternative 1: No-Build.

The Preferred Alternative could potentially result in indirect effects. These effects are individually discussed below by resource. Indirect effects from Alternative 3A and Alternative 3C would be largely similar in nature to those resulting from the Preferred Alternative as described in this section. Refer to the DEIS for additional information.

a. Land Use

The Preferred Alternative could indirectly result in changes in land use, population density, or growth rate in the city but any effects would likely be relatively minor. No new transit facilities would be created in an area where none currently exist; any of these alternatives would only replace a segment of the existing alignment in the general vicinity of the existing tracks. Thus, any indirect effects on land use or population would be the result of improved MARC and Amtrak passenger service to West Baltimore MARC, Baltimore Penn Station, and other passenger stops along the NEC. The Preferred Alternative would provide greater improvements in Penn Line and Amtrak passenger service, thus resulting in a greater potential for indirect land use impacts. Given the City's plans for redevelopment at West Baltimore MARC and Baltimore Penn Station, any growth-inducing effects of this improved service would be beneficial in working towards Baltimore City's goals of fostering transit-oriented development and regaining population lost in previous decades. In particular, improved speed and reliability of MARC Penn Line service could provide greater incentive for workers in D.C. to live in Baltimore City.

b. Socioeconomics and Environmental Justice

The Preferred Alternative would impact an estimated 13 businesses in the Study Area. The project alternatives could potentially result in impacts which are further removed in time or distance than direct effects, such as a lack of availability or higher cost of goods and services, and loss of employment which could degrade the community economic conditions. The Preferred Alternative would avoid direct impacts to the P. Flanigan & Sons asphalt manufacturing facility, which would have been substantially impacted under Alternatives 3A or 3C, thus avoiding potential indirect effects as there are few nearby facilities with similar capabilities.

Construction of an Intermediate Ventilation Facility at 900-940 West North Avenue could permanently preclude future redevelopment at the site within the footprint of the ventilation facility. Efforts to redevelop and enhance the West North Avenue corridor in this vicinity are reasonably foreseeable. Furthermore, direct visual impacts from the proposed Intermediate Ventilation Facility could indirectly affect future development by influencing the general character and cohesion of the surrounding blocks along the West North Avenue corridor, Reservoir Hill, and the adjacent Bolton Hill neighborhood. The Intermediate Ventilation Facility will be designed, so far as possible, to blend in to the surrounding community and to minimize indirect impacts on potential future development projects. Mitigation measures such as building design, façade treatments, and landscaping will be included in the Intermediate Ventilation Facility in order to reduce potential direct and indirect impacts.

The Preferred Alternative could have indirect community impacts resulting from conversion of residential areas in the Midtown Edmondson and Bridgeview-Greenlawn neighborhoods to transportation use. Direct noise, vibration, and visual impacts from new infrastructure and rail traffic through this neighborhood could result in less community cohesion near the new alignment. This could further contribute to issues of vacancy and housing deterioration already prevalent in the area.

Indirect effects to minority and low-income populations were assessed in relation to environmental justice guidelines as described in **Section VI**. All of the potential indirect impacts described above would occur in low-income and/or minority population areas. There would potentially be disproportionately high and adverse effects to low-income and minority populations resulting from indirect effects, as most of the effects would be borne by these populations.

c. Cultural Resources

The Preferred Alternative would have community impacts that would potentially result in indirect impacts to historic architecture. Because the alternative would introduce major new transportation infrastructure into the residential portions of neighborhoods including Midtown-Edmondson, Rosemont, and Bridgeview-Greenlawn; impacts from the new transportation infrastructure could lead to less community cohesion in the Study Area. Such an effect could then contribute indirectly to the ongoing deterioration of the numerous historic buildings contributing to the Midtown-Edmondson, Monroe-Riggs, Edmondson Avenue, and/or Greater Rosemont historic districts.

d. Natural Resources

Due to the highly-developed, urban nature of the Study Area, no indirect effects to natural resources would be anticipated from the Preferred Alternative. The relatively minor direct impacts to floodplains, forested land and street trees, with appropriate mitigation measures, would not be expected to result in indirect impacts to natural resources. The Preferred Alternative would include implementation of stormwater management and sediment and erosion control plans during construction and operations, which would limit the potential for indirect downstream effects to water quality.

e. Air Quality, Noise and Vibration

Although no increase has been identified, if greater volumes of freight traffic are allowed through the Northeast Corridor in the Study Area in the future, increased air quality impacts from diesel freight trains would need to be assessed in accordance with Clean Air Act requirements. Any increase in future air emissions would be in compliance with applicable air quality regulations.

Similarly, greater volumes of freight traffic, while not currently predicted, could result in increased severity of noise and vibration impacts relative to those described in **Section VI.I** and **Section VI.J** due to diesel freight trains traveling through the corridor more frequently. Although not determined and not currently planned as part of the B&P Tunnel Project, increased capacity for freight traffic through the Study Area could result in additional indirect noise and vibration impacts. Any potential noise and vibration impacts would likely occur near portals and at open sections.

f. Transportation

The Preferred Alternative would result in a beneficial indirect effect to transportation. The alternative would result in downstream improvements to the efficiency of passenger rail service along sections of the NEC north and south of Baltimore as a result of the removed travel bottleneck. Indirect effects could also include changing travel behavior from automobile, air travel and bus to passenger rail.

The Preferred Alternative could have indirect effects to transportation as a result of modifications to the roadway network in West Baltimore. This would result in changes to community access across the NEC, thereby resulting in long-term changes to travel patterns.

Impacts from any future increases in freight volume resulting solely from B&P Tunnel Project improvements are considered potential indirect impacts and are qualitatively assessed in this section. No additional improvements, beyond the Preferred Alternative, are assumed here. For discussion of the potential impact on freight traffic when considered in conjunction with other reasonably foreseeable projects, see **Section VI.M.10** below.

The Preferred Alternative could increase throughput capacity for freight traffic through the Study Area. CSX and NS both currently have trackage rights on the NEC through the existing B&P Tunnel. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the proposed tunnels, or the existing B&P Tunnel, without construction of additional connections as part of a separate project from the B&P Tunnel Project. At present, there are no indications from the freight railroads that existing freight levels through the B&P Tunnel are to change in the near future. It is up to the freight railroads to determine if using the B&P Tunnel is reasonable within the context of their overall operating strategy and rail network, and then whether Amtrak can accommodate the movement in a timeframe that meets the freight railroad needs.

While no specific increases in freight traffic are planned or proposed with the B&P Tunnel Project, increased throughput capacity and operational flexibility on the NEC could allow an option for Amtrak to route more freight trains through the Study Area without impeding their passenger operations. The demand for, and feasibility of, freight traffic along Amtrak's NEC through the Study Area will ultimately be determined by several relatively unpredictable variables such as market conditions and national government policy. Any increases would also need to be determined via agreement with Amtrak. The new tunnels will feature relatively steep grades that may not be desirable for freight carriers. Furthermore, CSX and NS would not be able to route double-stack freight through the proposed tunnels without constructing substantial additional improvements and connections elsewhere along the NEC, and the Preferred Alternative would be no more attractive for handling regular dimension loads as the existing B&P Tunnel.

g. Other

There would be no indirect effects to utilities, visual quality, hazardous materials, or safety and security from the Preferred Alternative.

10. Cumulative Impacts

Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.7).

Under Alternative 1: No-Build, no major improvements to the existing B&P Tunnel would occur and routine maintenance would continue. No cumulative impacts to the resources included in this analysis would therefore occur.

The resources evaluated for cumulative effects include those socioeconomic, cultural, and natural resources potentially affected, either directly or indirectly, by the project. Cumulative impacts from Alternative 3A and Alternative 3C would be largely similar in nature to those resulting from the Preferred Alternative as described in this section. Refer to the DEIS for additional information.

a. Land Use

The recently announced Project CORE initiative would involve demolition of vacant, blighted houses in various locations throughout Baltimore City including many in close proximity to the Preferred Alternative. The Preferred Alternative would require demolition of 22 residential structures, resulting in a cumulative impact when added to the demolitions occurring under Project CORE. A review of master plans and planned development projects in the area does not indicate any other projects or plans that would result in impacts or land use changes similar in nature to those resulting from the build alternatives such as residential displacements, community facility and business displacements, historic building impacts, or conversion of land to transportation use.

b. Socioeconomics and Environmental Justice

The Preferred Alternative would have community impacts similar in nature to the US 40 highway project (formerly I-70) along the Franklin – Mulberry corridor. Community impacts such as displacements, noise, and visual impacts resulting from the Preferred Alternative would be similar in nature to those resulting from construction and operation of the US 40 highway. Creating a new trenched transportation corridor in close proximity to affected portions of the Midtown-Edmondson neighborhood would cumulatively add to the past, present, and future impacts occurring as a result of the highway project. These cumulative impacts would occur in areas identified as low-income and/or minority population areas.

c. Cultural Resources

Project CORE would involve demolition of historic rowhomes in close proximity to those which would be demolished under the Preferred Alternative, including homes which are likely contributing to the Midtown Edmonson Historic District. Thus a potential cumulative impact to the Midtown Edmonson Historic District would result. Project CORE, like the B&P Tunnel Project, is being undertaken in consultation with the Maryland Historical Trust. A review of master plans and planned development projects in the area does not indicate any other reasonably foreseeable projects or plans that would result in demolition of historic architecture near the Preferred Alternative impacts.

d. Natural Resources

The only natural resource impacts identified for the Preferred Alternative are to floodplains, street trees and forested areas. A review of master plans, transportation plans, and planned development projects in the area does not indicate any reasonably foreseeable projects or plans that would require loss of street trees or forested areas near the build alternative impacts. Therefore, no cumulative impacts to natural resources are expected under the Preferred Alternative. Potential water quality impacts would be mitigated with the use of stormwater management and erosion and sediment control plans in accordance with applicable regulations to avoid direct or cumulative impacts.

e. Air Quality, Noise and Vibration

No impacts to air quality, in exceedance of the NAAQS, are anticipated under the Preferred Alternative. However, increased air quality impacts could result if additional rail projects, none of which are currently planned or are part of the B&P Tunnel Project, establish additional freight connections to allow CSX to route double-stack freight trains through the proposed tunnels. Any additional air quality impacts would still be subject to NAAQS air quality regulations.

A review of master plans, transportation plans, and planned development projects in the analysis area does not indicate any reasonably foreseeable projects or plans that would result in increased noise or vibration near the Preferred Alternative impacts. Therefore, no cumulative noise and vibration impacts are currently anticipated. However, increased noise and vibration impacts could potentially occur if additional projects, none of which are currently planned, establish additional freight rail connections to allow additional freight trains to route double-stack trains through the proposed tunnels or a repurposed B&P Tunnel. Any noise impacts from other projects would be subject to local noise regulations, as well as federal noise requirements if completed as part of a USDOT action.

f. Transportation

Any reasonably foreseeable cumulative effects of the Preferred Alternative along with planned projects along Amtrak's NEC would be beneficial improvements to regional and high-speed rail service. The Preferred Alternative would improve travel times, improve reliability and safety, increase capacity, and allow for more high-speed travel.

The Preferred Alternative, along with the reasonably foreseeable past, present, and future actions along the MARC Penn Line, would likely result in beneficial cumulative effects. Support of increased ridership, improved operational flexibility and reliability, and support of Amtrak's high-speed rail expansion are among the reasonably foreseeable cumulative impacts. The Preferred Alternative would contribute to this cumulative improvement of the MARC Penn Line.

Potential increases in freight traffic occurring as a result of other, independent projects not directly associated with the B&P Tunnel project are recognized as reasonably foreseeable. It is reasonably foreseeable that CSX would modify the Howard Street Tunnel to double-stack clearance in the near future. Should this happen, CSX will have its own double-stack route serving the Seagirt and Dundalk terminals of the Port of Baltimore through a north-south double-stack route. A double-stack Howard Street tunnel would significantly reduce the potential for use of the Preferred Alternative tunnels for Plate H freight service by CSX.

Although no such projects are currently planned, efforts to establish a double-stack freight corridor along the NEC through Baltimore City could potentially result in greater volumes of freight traffic through the Study Area. Substantial improvements would be necessary in order to establish a Plate H (double-stack) freight corridor along the NEC through Baltimore.

The Preferred Alternative would accommodate double-stack freight clearance in the new proposed tunnels, but restrictions would still exist to the north and south along the NEC. While no projects are currently planned or underway that would allow freight carriers such as CSX and NS to establish double-stack corridors through Baltimore, it is reasonably foreseeable that future efforts, independent of the B&P Tunnel Project, could lead to a double-stack corridor. The additional capacity and clearance would potentially make the proposed corridor a desirable route for freight operators, allowing a double-stack connection between the port of Baltimore and inland markets. Other projects would require evaluation through separate environmental analyses. The potential provision of Plate H on the NEC through Baltimore and to the north would require consideration of the following factors:

- Increasing the bridge and catenary clearance on the NEC where Plate H trains are to travel
- Construction of a new or modified Union Tunnel to Plate H/K clearances
- NS currently favors the Harrisburg-Perryville route for intermodal service
- Freight schedules limited to off peak/night time periods which affects the scheduling flexibility and transit time for high priority (intermodal) shipments for which time is absolutely critical.
- Uncertainty of the impacts of future government regulation
- Construction of track connection/s between the CSX and the NEC (if CSX chooses to use the NEC)

The Preferred Alternative would also include reserving the existing B&P Tunnel for potential future transportation use. The reservation of the existing B&P Tunnel would allow for potential re-use of the tunnel as a freight and/or passenger rail tunnel, possibly resulting in additional cumulative effects. No such re-use is currently planned or forecasted for the foreseeable future, but would not be precluded by the Preferred Alternative.

g. Other

There would be no cumulative effects to energy, water quality, utilities, visual quality, hazardous materials, or safety and security from the Preferred Alternative.

N. Irreversible or Irretrievable Commitments of Resources

The National Environmental Policy Act (NEPA) requires that environmental analyses include identification of "any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." An irreversible or irretrievable commitment of resources results in the permanent loss of a resource for future uses (or alternative purposes) as they cannot be replaced or recovered. Irreversible commitments involve the use or destruction of a specific resource (for example, natural resources such as water, minerals, or timber) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (for example, extinction of a threatened or endangered species or disturbance of a cultural site). Irreversible and irretrievable impacts were reviewed in accordance with NEPA (42 USC 4332(C)(v)); guidelines published by CEQ on implementing NEPA (40 CFR 1502.16); and FRA's Environmental Procedures Section 14(n)(10), (11) and (22).

Alternative 1: No-Build would not require an increase in irreversible and irretrievable commitment of resources above the current conditions and continued maintenance of the tunnel. Under the No Build, new commitments of resources would not occur beyond those that could occur related to other projects in the region.

The construction of the Preferred Alternative, or Alternative 3A or 3C would require the commitment of natural, human, and monetary resources. Generally, these resources would be committed irreversibly and irretrievably.

Construction materials such as wood, steel, fossil fuels, cement, aggregate, and bituminous material would be irretrievably expended during grading, tunneling, and track construction. Whereas these materials would be largely irretrievable when used, these resources are not in short supply and many of the materials could be recycled for other projects when they no longer meet the design needs for passenger rail service.

Construction of the Preferred Alternative, Alternative 3A, or Alternative 3C would require a one-time investment of federal funds, and potentially state and local funds, which are irretrievable because these funds would not be available for other projects.

The commitment of these resources is based on the recognition that residents in the area, state and region would benefit from the improved quality of the transportation system. These benefits would consist of improved accessibility and mobility, savings in time and greater availability of quality services that are anticipated to outweigh the commitment of these resources.

O. The Relationship between Local Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Short-term impacts to and use of resources in relation to long-term productivity were evaluated in accordance with NEPA (42 USC 4332(C)(iv)); guidelines published by CEQ on implementing NEPA (40 CFR 1502.16); and FRA's Environmental Procedures Section (14)(n)(22). This analysis qualitatively discusses the relationship between short-term impacts to and use of resources, and the long-term benefits and productivity of the environment. For this document, short-term refers to the estimated five to seven-year period of construction—the time when the largest number of temporary environmental effects is most likely to occur. Long-term refers to the more than 100-year life span estimated for the proposed tunnel following the completion of construction activities.

Alternative 1: No-Build would not involve any project-related construction; therefore, short- and long-term project-related effects from Alternative 1: No-Build are not anticipated.

Construction activities associated with the Preferred Alternative, Alternative 3A, or Alternative 3C could have short-term and construction effects related to the following items, which are also described in **Section VI.L**:

- Hazardous materials and waste disposal
- Water quality (erosion and sedimentation, and/or potential fuel and lubricant spills)
- Air quality (equipment emissions and fugitive dust)
- Noise and vibration (construction equipment)
- Property acquisition
- Traffic and pedestrian delays and detours

In addition, short-term employment, use of materials to construct the project, and purchases of goods and services generated by construction could create a short-term improvement in the local economy that would diminish once the construction is completed. For more information on potential economic effects, see **Section VI.A**.

Any inconveniences to residents, motorists, and rail patrons would be offset by the improved rail network once construction is completed. Any short-term uses of human, physical, socioeconomic, cultural, and natural resources would contribute to the long-term benefits of improved travel times, operations and reliability along the NEC corridor. Since the Northeast Corridor Improvement Program (NECIP) era 1976 – 1980, Amtrak has been making incremental improvements to increase speed and reduce travel time for train passengers for nearly 40 years. They have cumulatively delivered significant changes in the inter-city rail experience, amounting since 1980 to between a one-hour and a one-and-one-half hour reduction (Regional vs. Acela) of the travel time between NYC and Washington, D.C.

A rail program of continuous, small improvements can cumulatively produce a significant transformation in the quality of inter-city rail services. Individual investments to straighten curves and eliminate other impediments to high-speed travel are – over time – producing a steady migration of travelers from air and automobiles to trains, conserving energy, land, and air quality.

P. Comparison of Intermediate Ventilation Facility Sites

As described in **Chapter III**, FRA has identified the site at 900-940 West North Avenue as the preferred Intermediate Ventilation Facility site. The resulting environmental impacts of this preferred site are included in the build alternatives analysis throughout the discussion of environmental impacts presented in **Chapter VI**. This section includes a comparison of the environmental impacts resulting from three site options that were evaluated in detail for this FEIS: 900-940 West North Avenue, 850 West North Avenue, and Whitelock Street at Brookfield Avenue. All three of the sites are located in the Reservoir Hill neighborhood. **Figure VI-28** shows the three site options. **Table VI-46** provides a summary comparison between the Intermediate Ventilation Facility site options.

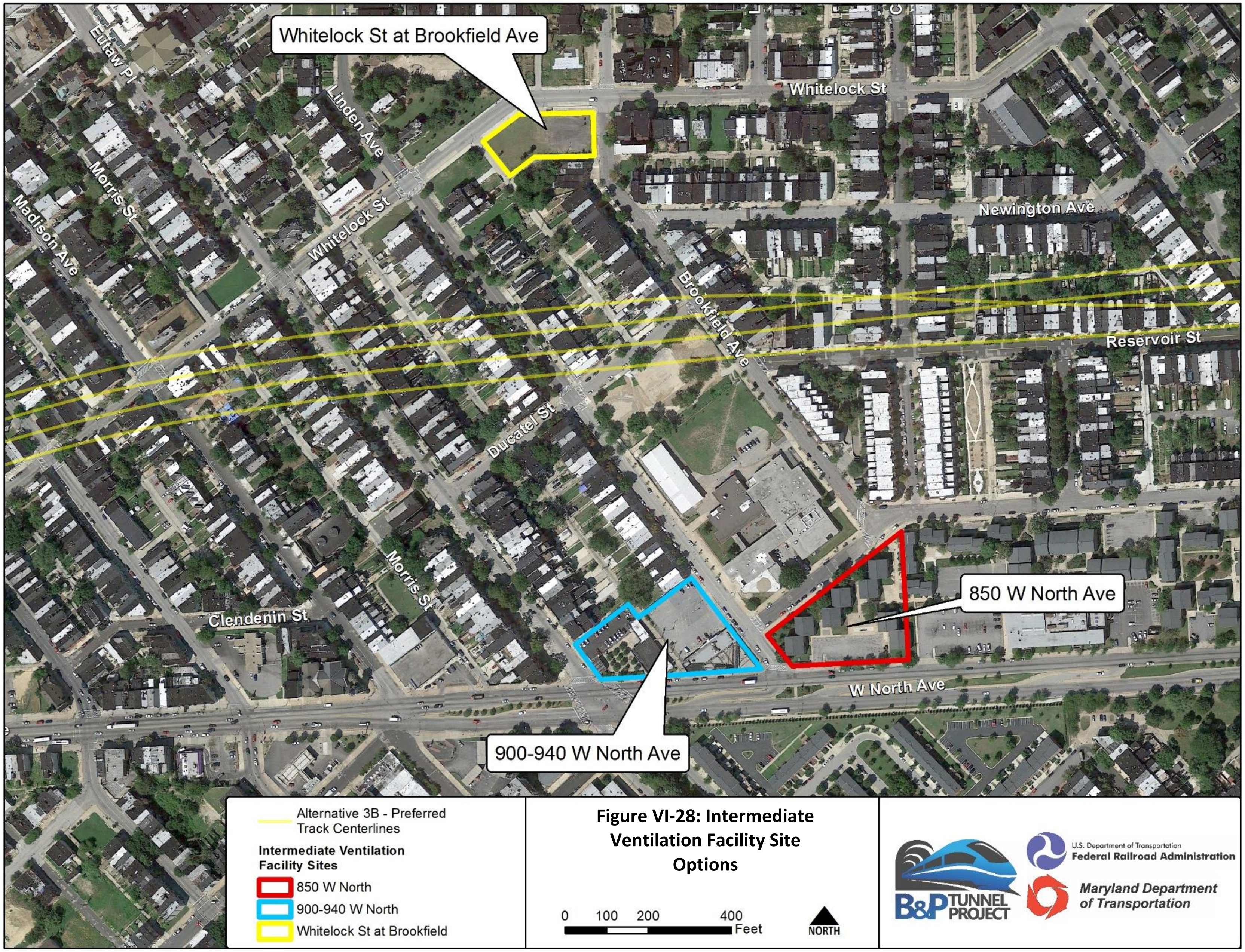


Figure VI-28: Intermediate Ventilation Facility Site Options

Whitelock St at Brookfield Ave
850 W North Ave
900-940 W North Ave
Eutaw Pl
Linden Ave
Morris St
Madison Ave
Whitelock St
Newington Ave
Brookfield Ave
Reservoir St
Ducatel St
Clendenin St
W North Ave
Alternative 3B - Preferred Track Centerlines
Intermediate Ventilation Facility Sites
850 W North
900-940 W North
Whitelock St at Brookfield
0 100 200 400 Feet
NORTH
B&P TUNNEL PROJECT
U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation

Table VI-46: Intermediate Ventilation Facility Site Options Comparison

Site	**900-940 West North Avenue**	**850 West North Avenue**	**Whitelock Street at Brookfield Avenue**
Cost	$590 Million	$820 Million	$325 Million
Land Use and Neighborhoods	• 7 Business Displacements • Commercial/residential uses nearby • Adjacent to Elementary School	• Vacant housing complex • Commercial/residential uses nearby • Adjacent to Elementary School	• Whitelock Community Farm • Residential uses nearby • 3 blocks away from Elementary School
Cultural Resources	• 1 historic building demolition • Periphery of Reservoir Hill Historic District	• No historic building demolitions • Periphery of Reservoir Hill Historic District	• No historic building demolitions • Interior of Reservoir Hill Historic District
Natural Resources	17 street trees and 10 landscaped trees	4 street trees and 20 landscaped trees	13 street trees and 22 landscaped trees
Hazardous Materials	8 sites in vicinity	8 sites in vicinity	10 sites in vicinity
Air Quality	2.9 ppb NO_2 – No Impact above NAAQS	2.9 ppb NO_2 – No Impact above NAAQS	2.9 ppb NO_2 – No Impact above NAAQS
Operational Noise	45 dBA	45 dBA	45 dBA
Construction Vibration	0.07 to 0.4 inches per second – No damage to old residential buildings in poor condition	0.07 to 0.4 inches per second – No damage to old residential buildings in poor condition	0.07 to 0.4 inches per second – No damage to old residential buildings in poor condition
Construction	Drill and blast – approximately 650-foot plenum length	Drill and blast – approximately 1,115-foot plenum length	Drill and blast – approximately 380-foot plenum length

1. Socioeconomic

This section discusses potential socioeconomic impacts resulting from each of the three Intermediate Ventilation Facility sites considered. There would be no difference in impacts among the site options for population, housing, environmental justice, or transportation.

a. 900-940 West North Avenue

No residences or community facilities would be impacted by the 900-940 West North Avenue site. The site is located along the commercial North Avenue corridor in Reservoir Hill. This location on the periphery of the residential neighborhood is more compatible with current surrounding land uses compared to the interior residential area of Reservoir Hill. However, the site is directly adjacent to residences.

The site at 900-940 West North Avenue would displace an estimated seven businesses currently located at the site. Replacing these businesses with a ventilation facility could lead to less community cohesion within the Study Area. These services would no longer be proximal to each other and community ties could potentially be affected or lost. The businesses could potentially be relocated near their existing location, which would reduce potential impacts to community cohesion. The impacted businesses include:

- Total Health Care Mt. Royal Health Center (922 West North Avenue)
- Sudsville Laundry (2000 Linden Avenue);
- Linden Bar & Liquor (904 West North Avenue);
- Always Learning Daycare Center (936 West North Avenue);
- Metropolitan Ob Gyn Associates (934 West North Avenue);
- Icetech Inc. (940 West North Avenue); and
- LinkIT, LLC (940 West North Avenue).

The 900-940 West North Avenue site would result in visual impact to the viewshed and community character in Reservoir Hill. Compared to the site on Whitelock Street, the site would be more visually compatible with the existing commercial corridor. The Intermediate Ventilation Facility would have high general visual sensitivity, as the primary viewer groups at this location are permanent residents as well as transitory viewer groups.

b. 850 West North Avenue

No residences, community facilities, or businesses would be directly impacted by an Intermediate Ventilation Facility at 850 West North Avenue. A portion of a vacant housing complex is currently located at the site. As with the 900-940 West North Avenue site, the 850 West North Avenue site is located along the commercial North Avenue corridor. This location on the periphery of the neighborhood is more compatible with current surrounding land uses compared to the interior residential area of Reservoir Hill. The site would be in close proximity to residential land uses, though it would be separated by roadways from nearby residences.

The site would result in visual impact to the viewshed and community character in Reservoir Hill. The Intermediate Ventilation Facility would be visually compatible with the existing commercial corridor compared to the Whitelock Street site. The Intermediate Ventilation Facility would have high general visual sensitivity, as the primary viewer groups at this location are permanent residents as well as transitory viewer groups.

c. Whitelock Street at Brookfield Avenue

No residences or businesses would be directly impacted by an Intermediate Ventilation Facility at the Whitelock Street at Brookfield Avenue site. The site’s current use as a portion of the Whitelock Community Farm would be displaced. Public consultation has indicated that the community farm use is considered an important community asset by residents, and replacing the community farm with an Intermediate Ventilation Facility could lead to less community cohesion in Reservoir Hill. The site is located in the interior of the residential portion of Reservoir Hill, and would not be compatible with surrounding residential land uses. The facility would also be directly adjacent to residences.

The site would result in high visual impact to the viewshed and community character in Reservoir Hill. The Intermediate Ventilation Facility would not be visually compatible with the existing community garden context, and would be surrounded by primarily residential properties. The Intermediate Ventilation Facility would have high general visual sensitivity, as the primary viewer groups at this location are permanent residents.

2. Cultural Resources

a. 900-940 West North Avenue

The 900-940 West North Avenue site would require demolition of one historic building, located at 900-908 West North Avenue. The building is a contributing element to the Reservoir Hill Historic District. Project consulting parties have indicated, through the Section 106 process, that the historic building at 904 West North Avenue is a relatively low preservation priority, and the site is preferable to one in the interior of the historic district despite the direct effect on a historic building. The site would result in an adverse effect on the Reservoir Hill Historic District, per Section 106, due to the building demolition, and visual and atmospheric effect on the historic district. More information on the Section 106 process is available in **Section VI.C**.

Demolition and permanent incorporation of the historic building at 900-908 West North Avenue would result in a Section 4(f) Use of the Reservoir Hill Historic District. Refer to the Final Section 4(f) Evaluation (**Section VI.D**) for more information.

b. 850 West North Avenue

The 850 West North Avenue site would have no direct effect on historic buildings. However, it would be located within the Reservoir Hill Historic District, and would have a visual and atmospheric effect on the historic district. Project consulting parties indicated that the site's location on the periphery of the Reservoir Hill Historic District is preferable to a location in the district's interior. However, the site would still result in an adverse effect on the Reservoir Hill Historic District due to the visual and atmospheric effect on the historic district.

No Section 4(f) use would result from the 850 West North Avenue site. The site is located in the Reservoir Hill Historic District but would not permanently incorporate any historic elements contributing to the district.

c. Whitelock Street at Brookfield Avenue

The Whitelock Street at Brookfield Avenue site would have no direct effect on historic buildings. However, it would be located within the Reservoir Hill Historic District, and would have a visual and atmospheric adverse effect on the historic district. Project consulting parties indicated that this site's location in the interior of the Reservoir Hill Historic District would have a more substantial visual and atmospheric effect compared to a site on the periphery of the district along West North Avenue, and that a site along West North Avenue would be preferable overall.

No Section 4(f) use would result from the Whitelock Street at Brookfield Avenue site. The site is located in the Reservoir Hill Historic District but would not permanently incorporate any historic elements contributing to the district.

3. Natural Resources

This section discusses potential natural resource impacts resulting from each of the three Intermediate Ventilation Facility site options considered. There would be no substantial impacts from the site on soils, topography, geology, aquifers and groundwater, water resources, coastal zone, or rare, threatened, and endangered species.

a. 900-940 West North Avenue

The 900-940 West North Avenue site would require impact to approximately 17 street trees and 10 landscaped trees within the site. No additional wildlife and habitat impacts would occur at the site.

b. 850 West North Avenue

The 850 West North Avenue site would require impact to approximately four street trees and 20 landscaped trees within the site. No additional wildlife and habitat impacts would occur at the site.

c. Whitelock Street at Brookfield Avenue

The Whitelock Street at Brookfield Avenue site would require impact to approximately 13 street trees and 22 landscaped trees. No additional wildlife and habitat impacts would occur at the site.

4. Hazardous Materials

Potential hazardous materials impacts would be similar for the three Intermediate Ventilation Facility sites considered. Eight low-priority sites of concern were identified within 500 feet of the 900-940 West North Avenue and 850 West North Avenue sites. Ten low-priority sites of concern were identified within 500 feet of the Whitelock Street at Brookfield Avenue site.

5. Air Quality

The results of the ventilation facility and portal dispersion modeling are presented in **Section VI.H.** The maximum predicted 1-hour NO_2 concentration for any of the Intermediate Ventilation Facility site options is 2.9 ppb. When added to the NO_2 background concentration of 51 ppb, the total predicted 1-hour concentration amounted to 53.9 ppb, which is below the NAAQS of 100 ppb. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. None of the three Intermediate Ventilation Facility site options considered would result in an exceedance of applicable NAAQS thresholds.

6. Noise

Noise levels in the immediate vicinity of the ventilation facilities would be caused by the operation of the ventilation fans within each facility. The horizontal fans would operate periodically and would generate sound that would propagate through the louvers on the top of the ventilation facilities. For noise generated within residential zones, there is a limit of 55 dBA at any point on the property line of the use. Between 9:00pm and 7:00am, the limit is 5 dBA lower for any uses within a residential zone (that is, 50 dBA). Although the Health Code allows for different noise limits for “short, durational deviations”, for the purposes of this project it is assumed that the noise limit for the ventilation facilities is L_{max} 50 dBA at the property boundary of each ventilation facility. Each of the three Intermediate Ventilation Facility site options would be designed to be below the L_{max} 50 dBA noise limit. A noise level of 50 dBA is roughly between that of a refrigerator and an air conditioner at a distance of three feet.

7. Vibration

Drill and blast tunnel excavation would be used to construct the intermediate ventilation cavern, plenum, tunnel, and shaft. Vibration resulting from drill and blast construction would range from approximately 0.07 to 0.4 inches per second for any of the three Intermediate Ventilation Facility site options considered. No vibration levels would exceed 0.5 inches per second, the level at which damage is likely to occur to old residential buildings in poor condition.

8. Construction

Each Intermediate Ventilation Facility site option would be connected to the underground railroad tunnels by a vent plenum constructed by drill and blast excavation. Vibration, noise, dust, and other effects from this underground blasting during construction would occur as described in **Section VI.I**, **VI.J**, and **VI.L.** The three ventilation facility sites would each require a different ventilation plenum route constructed underneath the Reservoir Hill neighborhood. The total length of the plenum would vary depending on the site chosen. The Whitelock Street at Brookfield Avenue site would have the shortest plenum route, approximately 380 feet long, resulting in less disruption during construction. The 900-940 West North Avenue site would require a plenum approximately 650 feet in length; and the 850 West North Avenue site would require a plenum approximately 1,115 feet long.

9. Indirect and Cumulative Effects

This section presents a comparison of potential indirect effects resulting from the three Intermediate Ventilation Facility sites considered. The sites would be roughly similar in their potential for indirect land use effects, as discussed below. See **Section VI.M** for more discussion of potential indirect and cumulative effects.

Construction of an Intermediate Ventilation Facility could permanently preclude future redevelopment at the site within the footprint of the ventilation facility. Efforts to redevelop and enhance the West North Avenue corridor and Reservoir Hill neighborhood in the vicinity of all three sites are reasonably foreseeable, though no specific plans are in place for development of the sites. Furthermore, direct visual impacts from the proposed Intermediate Ventilation Facility could indirectly affect future development by influencing the general character and cohesion of the surrounding blocks along the West North Avenue corridor, Reservoir Hill, and the adjacent Bolton Hill neighborhood. The Intermediate Ventilation Facility will be designed, so far as possible, to blend in to the surrounding community and to minimize indirect impacts on potential future development projects. The three sites would be largely the same in regard to this potential indirect impact; however, the Whitelock Street at Brookfield Avenue site would be less compatible with existing land uses and would therefore have a greater impact on the character and cohesion of Reservoir Hill. Mitigation measures such as building design, façade treatments, and landscaping will be included in the Intermediate Ventilation Facility in order to reduce potential direct and indirect impacts. Furthermore, cumulative impacts could result from other developments occurring in this vicinity with impacts to the visual character and cohesion of the community.

Chapter VII

Mitigation

VII. MITIGATION

Impacts that would result from the Preferred Alternative as described in **Chapter VI** will be mitigated through the implementation of mitigation measures described in this chapter. **Table VII-1** provides a description of these mitigation measures and the impacts they are intended to address. Although the following measures correspond with the Preferred Alternative, similar measures would also be appropriate to mitigate the impacts of Alternative 3A and Alternative 3C. Further details and final commitments for mitigation measures will be included in the Record of Decision (ROD).

For clarity, the table groups the mitigation measures into categories, including Outcome Monitoring, Community, Economy, Transportation, Natural Resources, Hazardous Materials/Emergency Management, Construction, Operational Air Quality, Operational Noise, Operational Vibration, and Cultural Resources and Historic Properties. The mitigation measures would be implemented during design, construction, and after construction of the Preferred Alternative. More detail on the mitigation items related to cultural resources and historic properties can be found in the draft Programmatic Agreement (PA) included in **Appendix H.**

Table VII-1: Mitigation Measures

No.	Mitigation Measure/Project Commitment	Relevant Impacts Mitigated
Outcome Monitoring		
1	A designated lead agency will monitor the outcomes and effectiveness of mitigation efforts by implementing detailed tracking procedures and public reporting.	All
Community		
2	The Preferred Alternative will include establishment of a fund to support community development within affected communities. Examples of community development activities include economic development projects, installation of public facilities, community centers, public services, small business assistance, homeowner assistance, and others. The fund will provide funding to not-for-profit community development organizations that serve communities within the corridor for operating expenses and capital projects. Funds will be awarded, based on published criteria, to organizations that are active within 1/4 mile of the Project alignment. Projects that are explicitly included under other mitigation measures, such as park improvements, will not be eligible for mitigation under this measure.	Community facilities, community cohesion, neighborhoods, environmental justice, land use, residential, business, cultural/historic
3	The Preferred Alternative will include the provision of relocation benefits to property owners and tenants pursuant to the Uniform Relocation Act.	Residential, business, environmental justice
4	The Preferred Alternative will include establishment of a fund for maintenance of, and improvement to, publicly-owned parks and recreation facilities within affected communities. Parks and recreation facilities receiving funding should be located within 1/4 mile of the Project alignment.	Community facilities, environmental justice, community cohesion, neighborhoods
5	The Preferred Alternative will include visual screening of ventilation facilities adjacent to schools and other community facilities.	Community facilities

No.	Mitigation Measure/Project Commitment	Relevant Impacts Mitigated
6	The Preferred Alternative will include funding to support the improvement or establishment of community gardens, vacant lot greening, and/or the establishment or improvement of public open space within 1/4 mile of the Project alignment.	Community facilities, street trees, stormwater, visual, community cohesion, neighborhoods, land use
7	The Preferred Alternative will include a mechanism for public comment in the design and landscaping of project facilities such as portals, ventilation facilities, and other visible project structures.	Visual, cultural/historic
Economy		
8	The Preferred Alternative will provide coordination with local job training organizations to 1) facilitate targeted job training by providing estimates of the type, number, and timing of jobs expected to be created by project contractors, 2) include in construction contracts goals for nationally targeted workers of social and economic disadvantage, and 3) require project contractors to report on a regular basis their progress in meeting contract goals. The Project will provide public reporting on job creation.	Environmental justice, business
Transportation		
9	The Preferred Alternative will include funding for streetscape infrastructure, pedestrian, and bicycle access improvements within 1/2 mile of the Project alignment with emphasis on access to the West Baltimore MARC Station. Examples include landscaping and street trees, bus stop facilities, benches, trash receptacles, lighting, sidewalk repairs, bike lanes, cycle tracks, crosswalk striping and signaling, traffic calming measures, ADA accessibility, and/or public art.	Street trees, stormwater, visual, transportation, community cohesion, neighborhoods
10	The Preferred Alternative will include development of a Traffic Plan that provides protection for safe pedestrian, bicycle, and vehicular movement around work sites during construction and maintains connectivity where possible. The plan will account for truck haul routes, construction traffic concerns, and municipal solid waste pick-up, and should help to minimize transportation impacts during construction. The plan should account for community resources such as schools and parks.	Transportation, community cohesion, neighborhoods, construction, traffic, community facilities, noise
11	The Preferred Alternative will include stabilization and securement of the existing B&P Tunnel for potential future rail transportation use.	Transportation
12	The Preferred Alternative will include the replacement of all impacted station facilities at the West Baltimore MARC Station, and reconstruction of the facility in compliance with ADA.	Transportation, visual, community facilities, cultural/historic
13	The Preferred Alternative will include additional amenities at the West Baltimore MARC Station relative to what currently exists. Improved amenities such as security lighting, full platform canopies, or public art may be considered.	Transportation, visual, community facilities

No.	Mitigation Measure/Project Commitment	Relevant Impacts Mitigated
Natural Resources		
14	The Preferred Alternative will include the development and implementation of a Stormwater Management Plan in accordance with MDE guidelines. The plan will focus on stormwater runoff associated with construction activities and surface impacts, both temporary and permanent, throughout the Study Area.	Stormwater, construction
15	The Preferred Alternative will include development and implementation of an Erosion and Sediment Control Plan for construction activities.	Stormwater, construction
16	The Preferred Alternative will include implementation of vegetative buffers to screen right-of-way along the Northeast Corridor in the Study Area, and develop a mechanism for maintenance of vegetative buffers.	Visual, stormwater
17	The Preferred Alternative will include implementation of a Rodent Abatement Plan.	Construction
18	The Preferred Alternative will include the development and implementation of a Street Tree Protection Plan and a Forest Conservation Plan.	Street trees
19	The Preferred Alternative will include a plan for floodplain mitigation.	Floodplain
20	The Preferred Alternative will include a Tunnel Sump Water Treatment and Disposal Plan.	Water resources
Hazardous Materials / Emergency Management		
21	The Preferred Alternative will include development and implementation of a Hazardous Spill Prevention Plan.	Hazmat
22	The Preferred Alternative will include development of an Emergency Management Plan to be implemented in the event of a tunnel emergency.	Safety/hazmat, transportation
23	The Preferred Alternative will include development of a Hazardous Materials Remediation Plan to remediate Hazardous Material sites impacted by the Project.	Hazmat
24	The Preferred Alternative will include development and implementation of a Screening and Materials Handling Plan for the pumping, segregation, transportation, and disposal of groundwater. Evaluation of any screening and sampling results by an environmental professional will determine health and safety, handling, and off-site disposal requirements.	Hazmat
25	The Preferred Alternative will include implementation of a program for the identification and segregation of impacted soils for additional testing and off-site disposal. Evaluation of any screening and sampling results by an environmental professional will determine health and safety, handling, and off-site disposal requirements.	Hazmat
Construction		
26	The Preferred Alternative will include development and implementation of a Construction Noise Mitigation Plan. The plan will include to the extent practicable: • Location of construction equipment and material staging areas away from sensitive receptors where possible; • Temporary noise barriers and advanced construction of permanent barriers to serve during construction where possible; and • Routing of construction traffic and haul routes along streets in non-noise sensitive areas where possible.	Noise, construction

No.	Mitigation Measure/Project Commitment	Relevant Impacts Mitigated
27	The Preferred Alternative will include development of a Construction Vibration Mitigation Plan to include the following measures: • Use of controlled blasting construction for vibration mitigation during drill and blast, and utilize blast covers when applicable. • Implementation of contractor control measures to ensure vibration from the TBM is kept low enough to avoid damaging buildings, including historic buildings, and remains below applicable FTA impact criteria. • Implementation of a vibration monitoring program and pre-survey of buildings in tunneling and blasting areas.	Vibration, construction, cultural/historic
28	The Preferred Alternative will include development and implementation of a Construction Emissions Reduction Plan to include measures such as reducing equipment idling times, utilizing on-site storage to reduce truck haul trips, using low-emissions equipment, dust suppression measures, ensuring the contractor has knowledge of appropriate fugitive dust and equipment exhaust controls, and other measures. Construction activities undertaken as part of the Preferred Alternative will be performed in accordance with Maryland's *Standard Specifications for Construction and Materials*, and COMAR 26.11.06.03D – *Fugitive Particulate Matter from Materials Handling and Construction.*	Air quality, construction
29	The Preferred Alternative will include utilization of public information and feedback methods such as construction-alert publications and complaint hotlines to address issues and keep the public informed. Notifications will include information about construction schedules, road closures, transit service impacts, blasting, and contact information.	All construction related
Operational Air Quality		
30	The Preferred Alternative will include vertically-oriented fans at ventilation facilities to facilitate dispersion of emissions from locomotives and avoid violation of air quality regulations.	Air quality
Operational Noise		
31	The Preferred Alternative will include noise barriers to mitigate anticipated operational noise impacts. Ventilation facilities will be designed with noise attenuation measures.	Noise
Operational Vibration		
32	The Preferred Alternative will include implementation of operational vibration control measures to mitigate modeled vibration or ground-borne noise impacts exceeding FTA Frequent Impact criteria. Potential mitigation measures to consider during design include: • Resilient fasteners • Ballast mats • Resiliently supported ties • Floating slab track • Rail vibration absorbers/dampers	Vibration
Cultural Resources and Historic Properties		
33	The Preferred Alternative will include the establishment of a preservation grant fund to address adverse effects to historic properties. More detail is included in the PA.	Cultural/historic

No.	Mitigation Measure/Project Commitment	Relevant Impacts Mitigated
34	The Preferred Alternative will include context-sensitive design treatments for new construction informed by the features of the affected historic properties. More detail is included in the PA.	Cultural/historic
35	The Preferred Alternative will include sound barriers and/or vegetation to ensure that relevant historic properties, including contributing elements of historic districts, are screened. More detail is included in the PA.	Cultural/historic
36	The Preferred Alternative will include a Historic Properties Construction Protection Plan designed to protect above- and below-ground known historic properties from adverse effects during construction activities. Additional provisions provide for identification, evaluation, and treatment of unknown cultural resources, unanticipated discoveries, and human remains. Plans will address vibration monitoring, stockpiling, and truck routes/hauling. More detail is included in the PA.	Cultural/historic
37	The Preferred Alternative will include preparation of written and photographic documentation consistent with Level II Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER) standards for deposit within the MD SHPO, for the historic properties, including contributing elements of historic districts, directly adversely affected. More detail is included in the PA.	Cultural/historic
38	The Preferred Alternative will include preparation of interpretive material including signs and/or displays and brochures to be located in Baltimore's Pennsylvania Station. Possible themes may include the history of the B&P Tunnel, the history of the Pennsylvania Railroad and Pennsylvania Station, the influence of railroads on Baltimore City, and/or archaeological findings in the Project area as relevant. More detail is included in the PA.	Cultural/historic
39	The Preferred Alternative will include measures for securing, salvaging, and stockpiling of building materials from the demolition of historic properties and contributing elements to historic districts. More detail is included in the PA.	Cultural/historic
40	The Preferred Alternative will include the addition to the existing project website of a new section on cultural resources that will provide a platform for the electronic storage and public dissemination of information on Project activities and findings related to historic architecture and archeology. More detail is included in the PA.	Cultural/historic
41	The Preferred Alternative will include the completion of a Phase I Archaeological Survey sufficient to identify archaeological resources that may be affected by the Project. A Phase II archaeological survey will be conducted to evaluate the identified resources for NRHP eligibility. If an adverse effect cannot be alternatively mitigated, the Preferred Alternative will include a Phase III Data Recovery for each adversely affected archaeological historic property. More detail is available in the PA.	Cultural/historic
42	The Preferred Alternative will include an investigation of the history, development, use, and evolution of the station facilities and yards comprising present-day Pennsylvania Station in Baltimore City for the purposes of clarifying and delineating the official boundaries of railroad-related NRHP-listed and eligible historic properties.	Cultural/historic

Chapter VIII

B&P TUNNEL PROJECT

Agency, Elected Official, and Public Coordination and Comments

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation

VIII. AGENCY, ELECTED OFFICIAL, AND PUBLIC COORDINATION AND COMMENTS

FRA and MDOT have encouraged agency and public input in Project development throughout the Project. The purpose of this coordination is to inform stakeholders, become aware of public and agency concerns and interests, and consider that input in Project development. From scoping to alternatives development to the identification of a Preferred Alternative, information received from agencies and the public has supplemented data collected by the Project Team through desktop research and field visits. Comprehensive input from the public and agencies has aided in the identification of a Preferred Alternative that both meets the Project Purpose and Need and minimizes impacts to the environment, to the extent possible.

The agency and public coordination process was implemented to be consistent with the Council on Environmental Quality NEPA regulations (40 CFR §§ 1500-1508); FRA Procedures for Considering Environmental Impacts (64 FR 28545 [1999]); and FRA Update to NEPA Implementing Procedures (78 FR 2713 [2013]). Agency and public coordination began in June 2014 with the scoping period at the initiation of the Project. The general public involvement process evolved as the Project advanced, a process which included the screening of the preliminary alternatives, the development and evaluation of alternatives carried forward, and the identification of the Preferred Alternative.

This chapter describes the agency and public coordination undertaken throughout Project development, presented first by agency and public coordination, and then by public involvement efforts conducted before and after the publication of the DEIS. This chapter also introduces official DEIS comments and responses (which are found in **Appendix I**), and summarizes the comments received since the close of the DEIS comment period on February 26, 2016.

Additional information on agency and public involvement may be found in the *Project Scoping Report*, the *Preliminary Alternatives Screening Report*, and the *Alternatives Report*, available at www.bptunnel.com.

A. Scoping Period

The Project was first introduced to agencies and the public during the scoping period, which began with the publication of the Notice of Intent (NOI) in the *Federal Register* on June 9, 2014 and concluded with the end of the scoping comment period on July 30, 2014. The primary goal of the scoping period was to introduce the Project to agencies and the public, and to gather input on the Project Purpose and Need and environmental resources. The scoping period also served to determine and clarify issues that were relevant to the scope of the Project. During the scoping process, communication was established between the lead Project agency and Project grantee (FRA and MDOT, respectively) and government agencies, citizens, elected officials, community associations, and other interested stakeholders.

The scoping process for the Project was implemented consistent with the Council on Environmental Quality NEPA regulations (40 CFR §§ 1500-1508); FRA Procedures for Considering Environmental Impacts (64 FR 28545 [1999]); and FRA Update to NEPA Implementing Procedures (78 FR 2713 [2013]). The scoping process included the following major elements:

- Publishing of the Notice of Intent in the *Federal Register* (June 9, 2014);
- Presentation at an Interagency Review Meeting (June 18, 2014);
- Hosting of a Public Open House (June 19, 2014); and

- Scoping comment period for agencies, the public, and any other interested stakeholders (June 9, 2014 to July 30, 2014).

While the scoping period officially began with the publication of the NOI in the *Federal Register* on June 9, 2014, outreach to the public started as early as May 20, 2014, when the Project website (www.bptunnel.com) was launched. The scoping period and the launch of the Project website laid the foundation for both agency coordination and public involvement throughout the remainder of the Project.

B. Agency Coordination

FRA and MDOT have encouraged agency input on Project development throughout Project development. The purpose of this coordination was to inform agency stakeholders, learn about agency concerns and interests, and use agency input in Project development. Information obtained from agency input has been used from Project scoping to engineering development and the environmental evaluation of the alternatives.

Federal and state agencies have been kept abreast of Project updates via the Project website, www.bptunnel.com, and regular Interagency Review Meetings (IRM) hosted by the Maryland State Highway Administration (SHA). The Project was presented to interested federal, state, and local agencies at six separate IRMs between June 2014 and April 2016, which took place both before and after the release of the DEIS. Agencies were invited to attend the IRM via e-mail.

1. Participation

Eighteen agencies were represented over the course of the process (**Table VIII-1**):

Table VIII-1: Agency Representation

Agency Represented at IRM	6/18/14	10/15/14	5/20/15	6/17/15	10/21/15	4/20/16
Baltimore Metropolitan Council (BMC)	x		x	x		
Critical Area Commission (CAC)			x			
Federal Highway Administration (FHWA)	x	x	x		x	x
Federal Railroad Administration (FRA)				x		
Maryland Department of Natural Resources (MD DNR)	x	x	x	x	x	x
Maryland Department of Planning (MDP)	x	x	x	x		x
Maryland Department of the Environment (MDE)	x	x	x		x	x
Maryland Department of Transportation (MDOT)		x	x	x		x
Maryland Historic Trust (MHT)	x	x	x	x		x
Maryland-National Capital Park and Planning Commission (M-NCPPC)						x
Maryland Port Administration (MPA)		x				
Maryland Transit Administration (MTA)	x		x	x	x	x
Maryland Transportation Authority (MDTA)	x					
National Park Service (NPS)			x			

Agency Represented at IRM	6/18/14	10/15/14	5/20/15	6/17/15	10/21/15	4/20/16
National Oceanic and Atmospheric Administration- National Marine Fisheries Service (NOAA- NMFS)		x			x	x
US Army Corps of Engineers (USACE)	x	x	x	x	x	x
US Environmental Protection Agency (EPA)	x	x	x	x	x	x
US Fish and Wildlife Service (USFWS)	x	x	x	x	x	x

2. Interagency Review Meetings

All IRMs were held at Maryland SHA in Hanover, Maryland. Each meeting included a presentation with maps, graphics, and other information on the Project background, purpose, and need. Additionally, each meeting provided information about the Project schedule and next steps, as well as contact information. Agencies were encouraged to submit comments throughout the Project process, and several agency comments were received through the online Project comment form.

a. Interagency Review Meeting: June 18, 2014

The purpose of the first IRM was to introduce agencies to the Project and encourage their input in the scoping process. The meeting included information about the tunnel's existing physical and operational conditions, environmental resources, and previous studies. Discussion topics included the existing physical conditions of the tunnel, construction impacts, double-stack freight train operations, stormwater management, and public and agency involvement.

b. Interagency Review Meeting: October 15, 2014

The purpose of the second IRM was to update agencies on the development of the preliminary alternatives and the release of the *Preliminary Alternatives Screening Report*. The meeting included information about screening methodology and recommendations for alternatives to be carried forward. Discussion topics included accommodation of both passenger rail service and freight rail operations, whether there was a speed goal for the Project, and coordination with the FRA NEC FUTURE team.

c. Interagency Review Meeting: May 20, 2015

The purpose of the third IRM was to serve as an update to agencies prior to the July 2015 Public Open House. The meeting included information about track and operation requirements, the alternatives carried forward from the screening (Alternative 1, Alternative 2, Alternative 3, and Alternative 11), the development of alternative options (Alternative 3A, Alternative 3B, Alternative 11 Option A, and Alternative 11 Option B), ventilation facilities, the future of the existing tunnel, and the alternatives evaluation criteria. Discussion topics included Project cost and potential property displacements.

d. Interagency Review Meeting: June 17, 2015

The purpose of the fourth IRM was to provide information on the development of alternative options. The meeting included information about the development of alternative options, ventilation facilities, the future of the existing tunnel, and the alternatives evaluation criteria. Discussion topics included stormwater management, Indirect and Cumulative Effects (ICE) analysis, vibration analysis, operation requirements, hydrogeology, right-of-way impacts, treatment of cut material, the Project completion date, natural resources, the future of the existing tunnel, and the Northern Long-Eared Bat.

e. Interagency Review Meeting: October 21, 2015

The purpose of the fifth IRM was to provide an overview of Alternative 1: No-Build, and Alternatives 3A, 3B and 3C, as well as the release of the *Alternatives Report*. The meeting included information about the evaluation criteria, the elimination of certain alternatives from the study (Alternative 2, Alternative 11 Option A, and Alternative 11 Option B), ventilation facilities, a follow-up to questions from the previous IRM, environmental documentation, and public involvement activities. Discussion topics included climate change resiliency, the treatment of cut material, and the future of the existing tunnel.

f. Interagency Review Meeting: April 20, 2016

The purpose of the sixth IRM was to provide an overview of the DEIS release and subsequent Public Hearings. The meeting included information about major comment themes from the DEIS comment period, Alternatives development and evaluation since the release of the DEIS, identification of the Preferred Alternative, Preferred Alternative engineering details, and ventilation facilities and intermediate ventilation facility sites.

C. Elected Official Coordination

The Project Team has held regular meetings with local, state, and federal elected officials who represent the Study Area. Beginning during preliminary alternatives development in Fall 2014, over 20 meetings were held with Study Area representatives in the US Congress, Maryland Congress, Baltimore City Mayor’s office, and Baltimore City Council. Elected officials were briefed on the status of the Project throughout its various stages, and were kept informed of public involvement efforts and public input. Meetings included a PowerPoint presentation as well as discussion; technical Project Team members attended the briefings when requested. Input, such as engineering and environmental concerns, received from elected officials during these meetings was continually incorporated into alternatives development and evaluation throughout the Project. Dates and types of meetings are recorded in **Table VIII-2** below.

Table VIII-2: List of Meetings with Officials

Date	Meeting Type	Official or Organization
October 14, 2014	Briefing	Congressman Cummings
October 29, 2014	Briefing	City Council President Jack Young and Councilman Nick Mosby
November 18, 2014	Briefing	Deputy Mayor Khalil Zaied
December 23, 2014	Briefing	Mayor’s Office of Neighborhoods
January 20, 2015	Pre-briefing	Mayor’s Senior Staff
February 4, 2015	Briefing	Councilman Welch
February 5, 2015	Briefing	Mayor and her Senior Staff
February 5, 2015	Briefing	Councilman Costello
February 5, 2015	Update	Council President Jack Young and Councilman Nick Mosby
March 19, 2015	Briefing	MD State Senate Delegation (including Senator Catherine Pugh, Senator Nathaniel McFadden, Senator Bill Ferguson)
March 20, 2015	PowerPoint provided	MD State House Delegation
June 8, 2015	Update	Councilman Costello (regarding June Open Houses)
June 8, 2015	Update	Council President Jack Young (regarding June Open Houses)

Date	Meeting Type	Official or Organization
June 9, 2015	Update	Deputy Mayor Khalil Zaied (regarding June Open Houses)
October 1, 2015	Briefed	Councilman Welch
October 2, 2015	Update	Deputy Mayor Khalil Zaied
October 6, 2015	Briefed	Council President Young
October 6, 2015	Update	Deputy Mayor Khalil Zaied
November 10, 2015	Briefed	Deputy Mayor Connor Scott and Legislative Andy Smullian
November 10, 2015	Briefed	Councilman Mosby
November 17, 2015	Project Team/ Engineering Team meeting	Councilman Mosby
March 18, 2016	Briefing	Annapolis City Delegation
March 21, 2016	Briefing	Councilman Costello on new ventilation facility locations

D. Public Involvement: Alternatives Development and Evaluation

Members of the public, including citizens, elected officials, and other stakeholders (i.e., community associations, Baltimore City agencies, and local institutions and businesses), are important Project participants and have been regarded as such throughout the Project process. At all meetings, the public was given the opportunity to learn about Project development in-person and directly ask questions and engage in discussion with the Project Team.

This section, **Section D,** presents public involvement efforts undertaken prior to the release of the DEIS on December 18, 2015. From the Project's NOI on June 9, 2014, through the alternatives development and evaluation that preceded the release of the DEIS, three Public Open Houses and ten community meetings were held. **Section E** provides updates on public involvement efforts undertaken since the release of the DEIS.

The Public Open House meetings were advertised via letters to elected officials, community associations, Baltimore City agencies, and other local institutions and businesses; postcards mailed to approximately 18,000 residences and businesses within approximately a half-mile of the existing B&P Tunnel alignment; newspaper advertisements in four publications; fliers posted at high-traffic locations within the Study Area; press releases and announcements on the Project website, www.bptunnel.com; and e-mails to the Project mailing list.

1. Public Open House: June 19, 2014

The first Public Open House was held during the scoping period on June 19, 2014, at the Talon Center at Coppin State University from 5:00 pm to 8:00 pm. Thirty-nine members of the public and agency representatives attended the first Public Open House. Ten display boards provided an overview of the Project, including the following Project elements: Project Purpose and Need; tunnel description and existing conditions; the NEPA process; environmental resource considerations; previous tunnel-related studies; the Project schedule; two maps of the existing B&P Tunnel alignment and vicinity, featuring historic and natural resources; and input solicitation and contact information. The display boards were posted to the Project website prior to the meeting.

2. Public Open House: October 29, 2014

The second Public Open House, which updated the public on alternatives development and the *Preliminary Alternatives Screening Report*, was held on October 29, 2014, at Mount Royal Elementary/Middle School, from 5:00 pm to 8:00 pm.

The Public Open House was attended by 110 members of the public, including citizens and agency representatives. Display boards provided an overview of the Project, specifically the preliminary alternatives development. Downloadable versions of these display boards were made available on the Project website prior to the meeting.

3. Public Open House: June 16, 2015

The third Public Open House for the Project was held on June 16, 2015, at Carver Vocational-Technical High School, from 5:00 pm to 8:00 pm. The purpose of this meeting was to present more detailed engineering development and environmental evaluation on the alternatives that had been carried forward from the preliminary screening, including Alternative 1; Alternative 2; Alternatives 3A, 3B, and 3C; and Alternatives 11A and 11B. This Public Open House also served as the public introduction of the alternative options.

The Public Open House was attended by 66 citizens and agency representatives. Display boards provided detailed information on the alternatives development and evaluation. Additionally, a presentation, which served as a broad introduction to the information on the display boards, was delivered three separate times during the evening. Downloadable versions of these display boards were made available on the Project website prior to the meeting.

4. Project Community Meetings

In addition to the Public Open Houses, the Project Team hosted ten smaller-scale community meetings in April, July, and October 2015. These community meetings were implemented in an effort to be responsive to community needs, clarify community concern, and facilitate Project understanding among Study Area residents. The meetings provided opportunities for the public to both learn about the Project background and milestones, as well as engage with the Project Team. Downloadable versions of the presentation were made available on the Project website after the meeting.

a. April 2015

A series of four Project community meetings were held in April 2015 in order to provide a status update on the engineering activities and environmental evaluation that had occurred since the *Preliminary Alternatives Screening Report*. Over 25 people attended the four meetings. These meetings were intended to prepare the public for the new information to be released at the Alternatives Public Open House. A 30-minute presentation by members of the Project Team provided Project background, the Purpose and Need, an overview of the preliminary alternatives screening process, the alternatives carried forward, and continuing Project activities. The presentation was followed by a Question-and-Answer session, during which community members voiced questions and concerns to the Project Team. The Project community meetings were held from 6:00 pm to 8:00 pm on the following dates:

- April 13, 2015, at Gilmor Elementary School;
- April 14, 2015, at Mount Royal Elementary/Middle School;
- April 20, 2015, at Westside Elementary School; and
- April 21, 2015, at Lockerman Bundy Elementary.

b. July 2015

Another series of three Project community meetings were held in July 2015 to provide a recap of information presented at the Alternatives Public Open House and provide opportunities for additional public input and questions. A total of 76 people attended the three meetings. During these meetings, the Project Team made a 30-minute presentation. The presentation highlighted the major topics of the June 2015 Public Open House, including the latest engineering development and environmental evaluation on Alternative 1; Alternative 2; Alternatives 3A, 3B, and 3C; and Alternative 11 Options A and B. The presentation was followed by a Question-

and-Answer session, during which community members voiced questions and concerns to the Project Team. The Project community meetings were held from 6:00 pm to 8:00 pm on the following dates:

- July 7, 2015, at Perkins Square Baptist Church;
- July 14, 2015, at Mount Lebanon Baptist Church; and
- July 16, 2015, at Mount Royal Elementary/Middle School.

c. October 2015

Three Project community meetings were held in October 2015 to provide community residents Project updates concurrent with the release of the *Alternatives Report*. A total of 97 people attended the three meetings. During these meetings, the Project Team made a 30-minute presentation. The presentation explained the reasons for eliminating Alternative 2, Alternative 11 Option A, and Alternative 11 Option B from further study. It also provided the latest engineering development and environmental evaluation on Alternative 1, Alternative 3A, Alternative 3B, and Alternative 3C, as well as the latest information on ventilation facilities. The presentation was followed by a Question-and-Answer session, during which community members voiced questions and concerns to the Project Team. The Project community meetings were held from 6:00 pm to 8:00 pm on the following dates:

- October 6, 2015, at Carver Vocational-Technical High School;
- October 13, 2015, at John Eager Howard Recreation Center; and
- October 20, 2015, at Mount Lebanon Baptist Church.

5. Community Association Meetings

The Project Team also attended local Community Association meetings to present information on the Project and respond to questions in smaller, neighborhood-focused settings. The Project Team attended the following Community Association meetings:

- Alliance of Rosemont Community Organizations (ARCO) on June 17, 2015, at St. Edwards Roman Catholic Church;
- Western District Community Council Meeting on August 27, 2015 at First Mount Calvary Baptist Church; and
- Reservoir Hill Improvement Council, Inc. (RHIC) on September 1, 2015, at John Eager Howard Recreation Center.

E. Public Involvement: DEIS Comment Period Process and Mitigation

The DEIS and Section 4(f) Evaluation was released to the public on December 18, 2015. An electronic version of the DEIS was made available on the Project website, www.bptunnel.com, and hard copies were made available at ten local agency and library locations. Since then, public involvement efforts have shifted to focus on gathering input on the DEIS and the identification of the Preferred Alternative, as well as working with community members to develop potential Project mitigation strategies. This coordination has been carried out through three DEIS Public Hearings during the DEIS comment period, two Public Open Houses, several Community Association meetings, and Mitigation Working Group meetings.

1. DEIS Comment Period and Public Hearings

The release of the DEIS on December 18, 2015, initiated the DEIS comment period, which ended on February 26, 2016. The DEIS Comment process included three Public Hearings, and allowed for agencies and citizens to submit formal comments on the DEIS. Agencies and the public were notified of the DEIS comment period and invited to the Public Hearings via the *Federal Register*; e-mails to the Project mailing list; updates to the Project website; newspaper advertisements, including the *Afro-American, The Baltimore Sun,* and the *City Paper*; State

Clearinghouse distribution; Study Area brochure mailings; and letters to agencies, elected officials, community associations, and other stakeholders. The two Public Hearings originally scheduled in the NOI had to be rescheduled due to winter storms. Rescheduled dates and locations for the Public Hearings were announced via e-mail to the Project mailing list, the Project website, newspaper advertisements, and Study Area postcard mailings.

Agencies and the public were encouraged to submit official comments on the DEIS via the following methods:

- Completing an online comment form at the Project website, www.bptunnel.com;
- Sending an e-mail to info@bptunnel.com;
- Sending written comments to B&P Tunnel Project, 81 W. Mosher Street, Baltimore, MD 21217; and
- Giving oral or written testimony at one or more of the three Public Hearings.

The Public Hearings allowed for citizens to review display boards; speak directly with Project Team members; and provide official, oral and written testimony on the DEIS. The Public Hearings were held on the following dates:

- February 1, 2016, from 5:00 pm to 8:00 pm at Frederick Douglass High School;
- February 6, 2016, from 10:00 am to 1:00 pm at Frederick Douglass High School; and
- February 17, 2016, from 5:00 pm to 8:00 pm at Carver Vocational-Technical High School.

A total of 132 citizens, elected officials, and organization and agency representatives attended the Public Hearings. Attendees included the following elected officials:

- US Representative Elijah Cummings;
- Maryland State Senator Catherine Pugh;
- Maryland State Delegate Barbara Robinson;
- Representative for Baltimore City Council President Bernard C. “Jack” Young; and
- Baltimore City Councilman Nick Mosby.

Attendees also included representatives from the following organizations:

- Baltimore City Central Committee;
- Baltimore City Commission for Historical and Architectural Preservation (CHAP);
- Baltimore City Department of Public Works–Office of Engineering and Construction (DPW–OEC);
- Baltimore City Recreation and Parks;
- Brotherhood of Locomotive Engineers and Trainmen- District of Columbia State Legislative Board (DCSLB);
- Chesapeake Climate Action Network;
- Coppin Heights CDC (CHCDC);
- Druid Heights CDC (DHCDC);
- Greater Mondawmin Coordinating Council (GMCC);
- Healthy Neighborhoods;
- Maryland Transit Administration Citizens Advisory Council (MTA CAC);
- Maryland Transit Administration Citizens Advisory Council for Accessible Transportation (CACAT);
- Matthew A. Henson Neighborhood Association (MAHNA)/Matthew A. Henson Community Development Corporation;
- N4O, Inc.;
- Reservoir Hill Improvement Council (RHIC);
- Residents Against the Tunnels (RATT);
- St. Francis Neighborhood Center; and

- Whitelock Community Farm.

A total of 54 individuals provided official oral testimony at the Public Hearings. Official comments received on the DEIS, as well as other Project comments received after the close of the DEIS comment period, are discussed in **Section F**.

2. Public Open Houses: April 6, 2016 and April 16, 2016

The fourth and fifth Public Open Houses for the Project were held on April 6, and April 16, 2016, at Frederick Douglass High School, from 5:00 pm to 8:00 pm and Carver Vocational-Technical High School, from 10:00 am to 1:00 pm respectively. The Public Open Houses offered the public an opportunity to see how their feedback given during the DEIS comment period was incorporated into the alternatives development and environmental evaluation. The purposes of the Public Open Houses were to:

- Review the refinements to all alternatives that minimized community impacts;
- Communicate that Alternative 3B was still under consideration;
- Receive input from the public on Alternative 3B;
- Explain the disadvantages of Alternative 3A and Alternative 3C when compared to Alternative 3B;
- Communicate that alternatives to the proposed Whitelock Street and Brookfield Avenue Intermediate Ventilation Facility location were being considered instead of Whitelock Street;
- Review the Intermediate Ventilation Facility locations along West North Avenue;
- Respond to public questions asked during the DEIS comment period regarding freight trains, vibration, air quality, and the need for four tracks; and
- Explain the next steps for the Project.

The Public Open Houses were advertised in a variety of ways. Letters were sent to elected officials, community associations, Baltimore City agencies, and other local institutions and businesses. Postcards were mailed to approximately 18,925 residences and businesses within approximately a quarter-mile of the Preferred Alternative, as well as additional properties within the Penrose community near the south portal that could potentially be impacted by the Project. Newspaper advertisements were placed in four publications, and fliers were posted at high-traffic locations within the Study Area. In addition, an announcement was posted on the Project website (www.bptunnel.com) and an e-mail was sent to the Project mailing list.

The Public Open Houses were attended by 81 citizens, elected officials, and organization and agency representatives. Display boards provided information on a variety of topics related to the revised alternatives, including the disadvantages of the refined Alternatives 3A and 3C. Boards also provided information on potential sites and tunneling costs for the Intermediate Ventilation Facility, an introduction to mitigation, and responses to the DEIS comment period Frequently Asked Questions. Downloadable versions of these display boards were made available on the Project website prior to the meeting.

3. Community Association Meetings

At the organization’s request, the Project Team met with Residents Against the Tunnels (RATT) on May 24, 2016 at Beth Am Synagogue from 6:00 pm to 7:30 pm. The purpose of the meeting was to address specific questions and concerns related to the Project. The Project Team gave an overview of the Project, the Project schedule, and addressed questions related to freight, diesel fumes, ventilation buildings and vibration.

The Project Team also met with the No Boundaries Coalition on June 14, 2016 at St. Peter Claver Church from 6:00 pm to 7:00 pm. The Project Team addressed questions related to the ventilation facility such as noise levels, impacts to West North Avenue development, and impacts to the John Eager Howard Elementary School. Questions also sought to address safety, vibration, and the Project timeline.

4. Mitigation Working Group Meetings

The Project has established a Mitigation Working Group to provide an opportunity for the Project Team to work with community stakeholders and representatives to identify potential mitigation measures for the Project in an ongoing process. The Mitigation Working Group consists of members of the Project Team, community stakeholders, and representatives of community associations, which include the following:

- Bikemore;
- Druid Heights Community Development Corporation;
- Matthew A. Henson Community Association;
- Midtown-Edmondson;
- Mt. Royal Community Development Corporation;
- Mt. Royal Improvement Association;
- No Boundaries Coalition;
- Residents Against the Tunnel (RATT);
- Reservoir Hill Historic District/Reservoir Hill Improvement Council;
- Rosemont Homeowners and Tenants Association;
- Western District Community Relations Council; and
- Whitelock Community Farm.

Two Mitigation Working Group meetings have been held thus far, on May 10 and May 31, 2016, at the Perkins Square Baptist Church from 6:30 pm to 8:00 pm. Mitigation measures are proposed for the following impacts: community, economy, transportation, natural resources, hazmat and emergency management, construction, noise, vibration, and cultural resources, as well as general Project mitigation. Measures proposed by the Working Group are discussed in more detail in **Chapter VII** and commitments and agreements made by the Project will be documented in the Record of Decision (ROD). The Mitigation Working Group is an ongoing process, beyond publishing of this FEIS. In order to keep the public updated, meeting minutes are available on the Project website www.bptunnel.com.

F. Agency and Public Comments

Agency and public comments have been an integral element of Project. Input from federal, state, and local agencies, as well as the public, has been solicited continually throughout the development of the Project. Comments were submitted via written comment cards; online comment forms at the Project website; the Project e-mail address, info@bptunnel.com; and postal mail. In addition to these methods, comments were submitted via recorded oral testimony during the DEIS comment period Public Hearings. The public was also encouraged to ask questions through telephone communication with a Baltimore City Project representative, whose telephone number was made available on the Project website and meeting materials.

Comments received prior to the publication of the DEIS were addressed through an e-mail reply and/or environmental documentation available on the Project website, including the *Scoping Report*, *Preliminary Alternatives Screening Report*, *Alternatives Report*, and the DEIS.

A total of 161 comments were received electronically, by mail, and at Public Hearings during the DEIS comment period, from December 18, 2015 to February 26, 2016. Major themes expressed in these comments include:

- Concerns about potential increases in freight trains and the transportation of hazardous materials and the potential for emergency events;
- Concerns about the potential disruption of neighborhood character and quality of life, and the potential deterrent to economic growth in Reservoir Hill, a revitalizing neighborhood;
- Concerns about the potential for degraded air quality;

- Concerns about potential vibration impacts on fragile and historic housing stock;
- Concerns about potential inequitable environmental impacts placed on low-income and/or Black and African-American Baltimore City residents and communities;
- The potential for new/different passenger and freight rail connections in Baltimore and regionally;
- Concerns about potential noise impacts;
- Questions concerning the need for four tracks as opposed to two tracks;
- General support for the Project;
- General concern over the proposed site for the Intermediate Ventilation Facility at Whitelock Street and Brookfield Avenue, where a community garden (Whitelock Farm) currently exists;
- Guarantee of compensation for potential damage to homes;
- Potential negative property value impacts in communities above the tunnel and near tunnel portals;
- General distrust of Project and Project Team intentions;
- Concerns about MARC's transition to an all-diesel fleet; and
- General concern that localized environmental costs are not worth the regional benefit of decreased travel time.

A specific response has been prepared for each comment received during the DEIS comment period (December 18, 2015 through February 26, 2016) including comments received during each of the three Public Hearings. DEIS comments and responses are presented in **Appendix I** of this FEIS.

There were 28 comments received after the close of the DEIS ccomment period on February 26, 2016. Sixteen comments were emailed, and 12 were collected from the April 2016 public open houses. These comments were not included in **Appendix I**. The themes addressed in these comments were largely similar to themes in comments received during the DEIS comment period. The themes in these comments included:

- General support for or opposition to the Project;
- Concerns for impacts to neighborhoods, historic districts, and businesses; foundations of older buildings and homes; air quality; and water resources;
- Recommendations for alternative routes previously considered by the Study;
- Interest in mitigation for impacts due to vibration and impacts to Whitelock Community Farm;
- Preference for the tunnel being cleared for high and wide loads;
- Appreciation for the public outreach process; and
- Concerns expressed about ventilation facility aesthetics.

Information addressing these comments can be found in **Chapter V** (Affected Environment), **Chapter VI** (Environmental Consequences), and **Chapter VII** (Mitigation). In addition to the themes identified above, six emailed comments specified the author's request to be added to a mailing list or interest in or availability for upcoming meetings.

Chapter IX

B&P TUNNEL PROJECT

List of Preparers

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Chapter X

Distribution of the Final Environmental Impact Statement

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation

X. DISTRIBUTION OF THE FINAL EIS

DISTRIBUTION LIST

The B&P Tunnel Project Final EIS, including Appendices and supporting Technical Reports, was made available to the following organizations:

Federal Agencies

Advisory Council on Historic Preservation
Federal Highway Administration
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National Oceanic and Atmospheric Administration – National Marine Fisheries Service
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US Department of Transportation
US Environmental Protection Agency
US Fish and Wildlife Service

State Agencies

Maryland Department of the Environment
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Maryland State Highway Administration
Maryland Transit Administration
Maryland Transportation Authority

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Community Organizations

2500 Block McCulloh Street Neighborhood Association
Alba Neighborhood Association
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Ashburton and Presbury Better Neighborhood Association
Ashburton Area Association
Charles-North Community Association
Citizens Concerned for the Hanlon Community
Citizens for Community Improvement-(CCI)
Clergy United to Transform Sandtown-(CUTS)
Communities Organized to Improve Life-(COIL)
Community Survival Center/The Community School
Concerned Citizens of Woodberry Association
Concerned Citizens of Grayson Street
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Old Goucher Community Association, Inc.
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Parkview Improvement Association, Inc.
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Pennsylvania Avenue Redevelopment Collaborative
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FEIS Document Availability Locations

Location	Address	City	State	ZIP Code
Baltimore City Department of Transportation, Transit Bureau	417 E. Fayette Street, 5th Floor	Baltimore	Maryland	21201
Bentalou Recreation Center	220 N. Bentalou Street	Baltimore	Maryland	21223
Bon Secours Community Works	26 N. Fulton Avenue	Baltimore	Maryland	21223
Enoch Pratt Library – Central Branch	400 Cathedral Street	Baltimore	Maryland	21201
Enoch Pratt Library – Edmondson Avenue Branch	4330 Edmondson Avenue	Baltimore	Maryland	21229
Enoch Pratt Library – Pennsylvania Avenue Branch	1531 W. North Avenue	Baltimore	Maryland	21217
Enoch Pratt Library – Walbrook Branch	3203 W. North Avenue	Baltimore	Maryland	21216
John Eagar Howard Recreation Center	2100 Brookfield Avenue	Baltimore	Maryland	21217
Maryland Department of Transportation	7201 Corporate Center Drive, 1st Floor Reception Desk	Hanover	Maryland	21076
Maryland Transit Administration	6 St. Paul Street, By Appointment Only at 410-767-3785	Baltimore	Maryland	21202

Chapter XI

References

XI. REFERENCES

Amtrak. (2010a). *NEC Master Plan*.

Amtrak (2010b). *A Vision for High-Speed Rail in the Northeast Corridor*.

Amtrak. (2012). *Amtrak Vision for the Northeast Corridor – 2012 Update Report*.

Amtrak. (2013). *The Amtrak Sustainability Report 2013*. Retrieved from Amtrak:

http://www.amtrak.com/ccurl/338/353/2013-Amtrak-Sustainability-Report.pdf.

Amtrak. (2015). *Baltimore Penn Station Master Plan.*

Amtrak. (December 2012 and 2014). *General Orders Timetable.*

Baltimore City. (1935). *Configuration of the Underlying Rock Floor.*

Baltimore City. (2008). *Land Use – Shapefile.* Accessed November 2014: https://data.baltimorecity.gov/browse?category=Geographic.

Baltimore City. (2013). *Comprehensive Annual Financial Report.* Accessed November 2014. Retrieved from Baltimore Department of Finance and Bureau of Accounting and Payroll Services: http://finance.baltimorecity.gov/Portals/Finance/documents/documents%20and%20reports/Fiscal%20Year%202013.pdf

Baltimore City. (2014). *Charm City Circulator: A Financial Analysis to Determine the Sustainability of Current Operations.* Retrieved from Baltimore Department of Finance and Bureau of the Budget and Management Research: http://www.wbaltv.com/blob/view/-/29940506/data/1/-/k4bdmc/-/Charm-City-Circulator-finance-report-11-26-14.pdf.

Baltimore City. (2014). *Current Real Property Tax in Baltimore.* Accessed November 2014: https://data.baltimorecity.gov/browse.

Baltimore City. (2015). *Noise Regulation.*

Baltimore City. (2015). *Real Property Taxes*. Retrieved from Open Baltimore: https://data.baltimorecity.gov/Financial/Real-Property-Taxes/27w9-urtv.

Baltimore City. (2016). Baltimore City Open GIS Data: Housing. Accessed June 2016: http://gis.baltimore.opendata.arcgis.com/datasets/7fbe7275a45e4cccb89fcb9e71f51979_0.

Baltimore City and MDOT. (2008). *West Baltimore MARC Station Master Plan (Transit-Centered Community Development Strategy).*

Baltimore City Department of Legislative Reference. (2013). *Health Code of Balitmore City.*

Baltimore Metropolitan Planning Organization. (2014). *2014-2017 TIP.*

BDC. (Accessed November 2014). *Top Employers in Baltimore City, Maryland*. Retrieved from Baltimore Development Corporation: http://baltimoredevelopment.com/about-baltimore/top-employers/.

Bureau, U. C. (2009-2013). *American Fact Finder*. Retrieved from United States Census Bureau: http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

CEQ. (1997). *Environmental Justice Guidance Under the National Environmental Policy Act.*

CEQ. (2010, February 18). *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*. Retrieved from Whitehouse.gov: https://www.whitehouse.gov/sites/default/files/microsites/ceq/20100218-nepa-consideration-effects-ghg-draft-guidance.pdf.

CEQ. (2015, December 18). *Revised Draft Guidance on the Considerations of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews*. Retrieved from Whitehouse.gov: https://www.whitehouse.gov/sites/default/files/docs/nepa_revised_draft_ghg_guidance_searchable.pdf.

CEQ. (2016). *Final Guidance on the Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews.* Retrieved from whitehouse.gov: https://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance.

City of Baltimore. (2012, Jan 3). *Baltimore Municipal Zoning Administration*. Retrieved from Baltimore Information Technology/Enterprise Geographic Information Services/Zoning Map: http://archive.baltimorecity.gov/Portals/0/agencies/egis/public%20downloads/zoning_Sheet%2034.pdf.

City of Baltimore Real Property. (2015). *Real Property City of Baltimore*. Retrieved from City Services Baltimore City: http://cityservices.baltimorecity.gov/realproperty/default.aspx.

Cooperative Forecasting Group. (2014, July). *Round 8A Cooperative Forecasts - Baltimore Region - Population, Household and Employment Controls*. Retrieved from Baltimore Metropolitan Council: http://www.baltometro.org/phocadownload/Committees/CFG/Round8A_JurisdictionTotals.pdf.

DataMind. (2012). *Percent of students receiving free or reduced price meals (2011-2012 school year)*. Retrieved from Baltimore DataMind: http://www.baltimoredatamind.org/map/.

Ed. Berkowitz, J. W. (2012). *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0.* Vicksburg, MS: US Army Engineer Research and Development Center.

EPA. (2004, September). *Water Quality Analysis of Copper and Lead for the Jones Falls Baltimore City and Baltimore County, Maryland.* Retrieved from Maryland Department of the Environment.

EPA. (2009). *Emission Factors for Locomotives.* Office of Transportation and Air Quality.

EPA. (2015, September 10). *De-Minimis Levels*. Retrieved from General Conformity: http://www.epa.gov/oar/genconform/deminimis.html.

EPA. (2015). *Sole Source Aquifer Program*. Retrieved from Environmental Protection Agency: www.epa.gov/region1/eco/drinkwater/pc_solesource_aquifer.html.

FHWA. (1981). *Visual Impact Assessment for Highway Projects .*

FRA. (1999). *FRA Procedures for Considering Environmental Impacts.*

FRA. (2005). *Baltimore's Railroad Network Study.*

FRA. (2015, February 25). *NEC FUTURE Project*. Retrieved from Input request.

FRA. (2015). *Tier 1 EIS Alternatives Report.*

FRA. (Accessed 2015). *About NEC FUTURE*. Retrieved from NEC Future: A Rail Investment Plan for the Northeast Corridor: http://www.necfuture.com/about/service_dev_plan.aspx.

FRA and MDOT. (2011). *Baltimore's Railroad Network: Analysis and Recommendations.*

FRA and USDOT. (2005). *Baltimore's Railroad Network Study: Challenges and Alternatives.*

FTA. (2006). *Transit Noise and Vibration Impact Assessment.*

FTA. (2010, January). *Public Transportation's Role in Responding to Climate Change.* Washington, DC: US Department of Transportation. Retrieved from: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/PublicTransportationsRoleInRespondingToClimateChange2010.pdf.

FTA. (2012). *Environmental Justice Policy Guidance for FTA Recipients, FTA Circular 4703.1.* Washington, DC: US Department of Transportation. Retrieved from: https://www.transit.dot.gov/regulations-and-guidance/fta-circulars/environmental-justice-policy-guidance-federal-transit.

FTA and MTA. (September 2012). *Noise and Vibration Technical Report* (Document No. 0850). Retrieved from Baltimore Red Line Project.

HABC. (Accessed 2014, August). *Public Housing*. Retrieved from Baltimore Housing: http://www.baltimorehousing.org/public_housing.asp.

Howell, G.P. and T. Ericson. (1997). *State Forest Conservation Technical Manual, 3rd edition.* Annapolis, MD: Maryland Department of Natural Resources.

HUDuser. (2014). *Qualified Census Tract Table Generator.* Accessed August 2014: http://qct.huduser.org/index.html.

LTK Engineering Services. (2014). *Washington Terminal Yard Future Operating Plans (MARC/Amtrak 2020 and 2030 Plans).*

Maryland Commission on Climate Change. (2008). *Comprehensive Assessment of Climate Change Impacts in Maryland.* Scientific and Technical Working Group. Retrieved from http://www.mde.state.md.us/programs/Air/ClimateChange/Documents/FINAL-Chapt%202%20Impacts_web.pdf.

Maryland Department of Transportation. (2015). *2015 Annual Attainment Report on Transportation System Performance; Implementing the Maryland Transportation Plan & Consolidated Transportation Program.* MDOT.

Maryland State Archives. (2015). *Budget of State Government*. Retrieved from Maryland Manuel On-Line: http://msa.maryland.gov/msa/mdmanual/34bud/html/prop.html.

MDE. (2002). *Water Quality Analysis of Zinc for the Jones Falls Baltimore City and Baltimore County, Maryland.* Retrieved from Maryland Department of the Environment.

MDE. (2006). *Maryland DepartmentTotal Maximum Daily Loads of Fecal Bacteria for the Non-Tidal Jones Falls Basin in Baltimore City and Baltimore County, Maryland.*

MDE. (2009). *Maryland Department of the EnviWater Quality Analysis of Eutrophication for the Jones Falls Watershed in Baltimore City and Baltimore County, Maryland.*

MDE. (2011). *Total Maximum Daily Load of Sediment in the Jones Falls Watershed, Baltimore City and Baltimore County, Maryland.*

MDP. (2010). *State of Maryland Land Use.* Accessed Nov 2014: http://planning.maryland.gov/PDF/OurWork/LandUse/County/Statewide.pdf.

MTA. (2013). *Growth and Investment Plan Update 2013 to 2050.* https://mta.maryland.gov/sites/default/files/mgip_update_2013-09-13.pdf.

MTA. (2013). *MARC Growth and Investment Plan Update 2013 to 2050.*

MTA. (2013). *West Baltimore MARC Station Master Plan (Transit-Centered Community Development Strategy).* November.

NBTS. (2015). *Table 4-4: US Energy Consumption by Transportation Sector.* National Bureau of Transportation Statistics.

NEC IOAC. (2013). *Critical Infrastructure Needs on the Northeast Corridor.*

NEC Master Plan Working Group. (2010). *NEC Infrastructure Master Plan.*

Reconnecting America. (n.d.). *reconnectingamerica.org*. Retrieved from Reconnecting America: People. Places. Possibility: http://reconnectingamerica.org/what-we-do/what-is-tod/.

Reger, J.P. and E.T. Cleaves. (2008). *Draft Physiographic Map of Maryland.* Retrieved from Maryland Geological Survey: http://www.mgs.md.gov/geology/physiographic_map.html.

Reutter, M. (2013, November 19). *Last Night Amtrak and Baltimore Escaped a Potential Disaster.* Retrieved from Baltimore Brew: https://www.baltimorebrew.com/2013/11/19/last-night-amtrak-and-baltimore-escaped-a-potential-disaster/.

SBA. (Accessed 2015). *HUBZone Program*. Retrieved from US Small Business Administration: https://www.sba.gov/content/frequently-asked-questions.

Transportation, M. D. (2015). *2015 Annual Attainment Report on Transportation System Performance.* Retrieved from: http://www.mdot.maryland.gov/Office_of_Planning_and_Capital_Programming/CTP/CTP_15_20/CTP_Documents/2015_Final_AR.pdf.

Trapp, H. and M.A. Horn. (1997). *Ground-water atlas of the United States – segment 11, Delaware, Maryland, New Jersey, North Carolina, Pennsylvania, Virginia, West Virginia.* US Geological Survey.

US Census Bureau. (2012). *Annual Economic Survey: County Business Patterns. Table ID CB1200A11.* Accessed November 2014: http://factfinder2.census.gov.

US Census Bureau. (2013). *American Community Survey 2009-2013.* http://www.census.gov/acs/www/data_documentation/summary_file.

US Census Bureau. (2013a). *American Community Survey 2009-2013.* http://www.census.gov/acs/www/data_documentation/summary_file.

US Census Bureau. (2013b). *American Factfinder: Business and Industry: Labor Costs: Payroll – Annual. Table ID CB1200CZ11.* http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t.

US Census Bureau. (2013c). *Annual Economic Survey: County Business Patterns. Table ID CB1300A11.* Retrieved from: Factfinder.Census.gov.

US Census Bureau. (2013d). *American Factfinder: Business and Industry: Labor Costs: Payroll – Annual. Table ID CB1300CZ11.* http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t.

US Census Bureau. (2013e). *Factfinder*. Retrieved from Factfinder.census.gov Table ID: CB1300A11: http://baltimoredevelopment.com/about-baltimore/top-employers/.

US Census Bureau. (2013f). *American Fact Finder County Business Patterns by Employment Size Class Table ID CB1300A13*. Retrieved from US Census Bureau: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=BP_2013_00A3&prodType=table.

US Census Bureau. (Accessed 2014, August). *American Factfinder: DP03: Select Economic Characteristics – Tracts. US Census Bureau American Community Survey 2008-2012*. Retrieved from http://factfinder2.census.gov/.

USDHHS. (Accessed 2014, Sept 19). *Office of the Assistant Secretary for Planning and Evaluation*. Retrieved from 2012 HHS Poverty Guidelines: http://aspe.hhs.gov/2012-hhs-poverty-guidelines.

USDOE. (2014). *Transportation Energy Data Book Edition 34.* Oak Ridge National Laboratory. http://cta.ornl.gov/data/download34.shtml.

USDOE (2015). Transportation Energy Data Book: Edition 34. Oak Ridge National Laboratory, Oak Ridge Tennessee. Retrieved from: http://cta.ornl.gov/data/tedb34/Edition34_Full_Doc.pdf.

USDOT. (2009). *High-Speed Rail Strategic Plan.*

USDOT. (Accessed September 8, 2014). *NEC FUTURE*. Retrieved from: http://www.necfuture.com/.

USDOT and FRA. (2015). *Tier 1 EIS Alternatives Report.*

US Environmental Protection Agency. (2016). *What Climate Change Means for Maryland.* Retrieved September 22, 2016, from https://www3.epa.gov/climatechange/Downloads/impacts-adaptation/climate-change-MD.pdf.

USFWS. (2015). *IPaC Trust Resource Report.*

US Global Change Research Program. (n.d.). *Northeast*. Retrieved from GlobalChange.gov: http://www.globalchange.gov/explore/northeast.

Waste Diversion and Utilization Program. (2015). *Maryland (Maryland Solid Waste Management and Diversion Report 2014 (Calendar Year 2013 Data)).*

GIS Mapping Data Sources

Figure No.	Figure Title	GIS Data Source(s)
II-1	Existing B&P Tunnel Project Vicinity	City of Baltimore, 2012
III-2	Alternative 3A Plan and Profile	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010
III-3	Alternative 3B Plan and Profile	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010
III-4	Alternative 3C Plan and Profile	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010
III-5	Intermediate Ventilation Facility Sites Considered	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010
IV-1	Preferred Alternative Plan and Profile	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010
IV-2	FEIS Preferred Alternative Plan Sheet 1 of 7	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010-2012
IV-3	FEIS Preferred Alternative Plan Sheet 2 of 7	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010-2012
IV-4	FEIS Preferred Alternative Plan Sheet 3 of 7	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010-2012
IV-5	FEIS Preferred Alternative Plan Sheet 4 of 7	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010-2012
IV-6	FEIS Preferred Alternative Plan Sheet 5 of 7	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010-2012
IV-7	FEIS Preferred Alternative Plan Sheet 6 of 7	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010-2012
IV-8	FEIS Preferred Alternative Plan Sheet 7 of 7	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010-2012
IV-11	Intermediate Ventilation Facility	Google Pro Aerial Imagery, 2012; City of Baltimore, 2010
V-1	Study Area Census Tracts and Block Groups	US Census Bureau 2013; City of Baltimore, 2010

Figure No.	Figure Title	GIS Data Source(s)
V-4	Minority and Low Income Block Groups within the Study Area	US Census Bureau American Community Survey (ACS) 5-Year Estimates (2013-2018); Google Pro Aerial Imagery, 2012
V-5	Existing Land Use within the Study Area	City of Baltimore, 2008 (with revisions based on field observation); Maryland Department of Planning, 2012
V-6	Existing Zoning within the Study Area	City of Baltimore, 2008; Maryland Department of Planning, 2012
V-7	ZIP Codes within the Study Area	City of Baltimore, 2008-2011
V-8	Neighborhoods within the Study Area	City of Baltimore, 2008
V-9	Community Facilities within the Study Area	City of Baltimore, 2008; US Geological Survey Geographic Names Information System, 2012; Field observation, 2014-15
V-18	Historic Architectural Resources within the APE	Maryland Historical Trust, 2015; Field survey 2014-2015
V-19	Natural Resources within the Study Area	Google Pro Aerial Imagery, 2012; FEMA 100-Year Flood Zone, 2008; City of Baltimore, 2010; US Fish and Wildlife Survey National Wetlands Inventory, 2013; USDA Web Soil Series Mapping, 2013; Desktop and Field Review, 2014-2015
V-20	Potential Hazardous Material Locations within the Study Area	Google Pro Aerial Imagery, 2012; *Hazardous Materials Technical Report*, 2015
V-21	South Portal Sites of Concern and Sample Locations	Google Pro Aerial Imagery, 2012; *Hazardous Materials Technical Report*, 2015
V-22	Tunnel Area Sites of Concern and Sample Locations	Google Pro Aerial Imagery, 2012; *Hazardous Materials Technical Report*, 2015
V-23	North Portal Sites of Concern and Sample Locations	Google Pro Aerial Imagery, 2012; *Hazardous Materials Technical Report*, 2015
VI-1	Alternatives within Census Tracts and Block Groups	City of Baltimore, 2010; US Census Bureau, 2013
VI-2	Alternatives within Minority and Low Income Block Groups	US Census Bureau ACS 5-Year Estimates (2013-2018); Google Pro Aerial Imagery, 2012
VI-3	Alternatives within Land Use Types	City of Baltimore, 2008 (with revisions based on field observation); Maryland Department of Planning, 2012
VI-4	Alternatives within Zoning Districts	City of Baltimore, 2008; Maryland Department of Planning, 2012
VI-5	Alternatives within ZIP Codes	City of Baltimore, 2008-2011
VI-6	Alternatives within Neighborhoods	City of Baltimore, 2008
VI-7	Alternatives and Community Facilities	City of Baltimore, 2008; USGS Geographic Names Information System, 2012; Field Observation, 2014-2015
VI-8	Historic Architecture Area of Potential Effects	Maryland Historical Trust, 2015; Field survey and review, 2014-2016
VI-9	Alternative 3A North Portal Section 4(f) Resources	Maryland Historical Trust, 2015; Field survey and review, 2014-2016
VI-10	Alternative 3A South Portal Section 4(f) Resources	Maryland Historical Trust, 2015; Field survey and review, 2014-2016

Figure No.	Figure Title	GIS Data Source(s)
VI-11	Alternative 3A, 3B, & 3C Intermediate Ventilation Plant Section 4(f) Resources	Maryland Historical Trust, 2015; Field survey and review, 2014-2016
VI-12	Alternative 3B North Portal Section 4(f) Resources	Maryland Historical Trust, 2015; Field survey and review, 2014-2016
V-13	Alternative 3 B South Portal Section 4(f) Resources	Maryland Historical Trust, 2015; Field survey and review, 2014-2016
VI-14	Alternative 3C North Portal Section 4(f) Resources	Maryland Historical Trust, 2015; Field survey and review, 2014-2016
VI-15	Alternative 3C South Portal Section 4(f) Resources	Maryland Historical Trust, 2015; Field survey and review, 2014-2016
VI-16	Section 4(f) Resources Avoidance Alternatives	Maryland Historical Trust, 2015; Field survey and review, 2014-16; *Preliminary Alternatives Screening Report*, 2015.
VI-17	Alternatives and Natural Resources	Google Pro Aerial Imagery, 2012; FEMA Flood Mapping, 2008; City of Baltimore, 2010; USFWS NWI, 2013; USDA WSS Mapping, 2013; Desktop and Field Review, 2014-2016
VI-18	Preferred Alternative Hazardous Material Sites of concern	Bing Imagery, 2012; *Hazardous Materials Technical Report*, FEIS Update 2016
VI-19	Preferred Alternative South Portal	Bing Imagery, 2012; *Hazardous Materials Technical Report*, FEIS Update 2016
VI-20	Preferred Alternative Tunnel	Bing Imagery, 2012; *Hazardous Materials Technical Report*, FEIS Update 2016
VI-21	Preferred Alternative North Portal	Bing Imagery, 2012; *Hazardous Materials Technical Report*, FEIS Update 2016
VI-22	Noise Monitoring Locations and Estimated Noise Impacts	ESRI Imagery; *FEIS Noise Technical Report*, 2016
VI-24	Predicted Ground-Borne Noise Impacts from the Preferred Alternative	Google Pro Aerial Imagery, 2012; *FEIS Vibration Technical Report*, 2016
VI-27	Indirect and Cumulative Effects Analysis Area	City of Baltimore, 2012
VI-28	Intermediate Ventilation Facility Site Options	City of Baltimore, 2012

Chapter XII

Acronyms

XII. ACRONYMS

AAR	Association of American Railroads
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
ADA	Americans with Disabilities Act
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AM	"Ante meridiem" or before noon
APE	Area of Potential Effects
ARCO	Alliance of Rosemont Community Organizations
ARRA	American Recovery and Reinvestment Act
AST	Above-ground Storage Tank
B&O	Baltimore and Ohio
B&P	Baltimore and Potomac
BC	Baltimore City
BCDOT	Baltimore City Department of Transportation
BEA	Bureau of Economic Analysis
BGS	Below Ground Surface
BIBI	Benthic Index of Biological Integrity
BLS	Bureau of Labor Statistics
BMC	Baltimore Metropolitan Council
BMP	Best Management Practices
BRTB	Baltimore Regional Transportation Board
BSID	Biological Stressor Identification
BTU	British Thermal Unit
BWI	Baltimore Washington International Airport
C&D	Construction and Demolition (Debris)
CAA	Clean Air Act
CAC	Critical Area Commission
CACAT	Citizens Advisory Council for Accessible Transportation
CAGR	Compound Annual Growth Rate
CCC	Charm City Circulator
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CHAP	Commission for Historical and Architectural Preservation
CHCDC	Coppin Heights Centers for Disease Control
CO	Carbon Monoxide
COMAR	Code of Maryland Regulations

CORE	Creating Opportunities for Renewal and Enterprise
CSA	Combined Statistical Area
CWA	Clean Water Act
dB(A)	A-weighted sound decibels
Dbh	Diameter at breast height
DCSLB	District of Columbia State Legislative Board
DDOT	District Department of Transportation
DEIS	Draft Environmental Impact Statement
DHCDC	Druid Heights Centers for Disease Control
DNR	Department of Natural Resources
DOE	Department of Energy
DOE Form	Determination of Eligibility Form
DOT	Department of Transportation
DPW-OEC	Department of Public Works – Office of Engineering and Construction
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
F&S	Flanigan & Sons
FACP	Fire Alarm Control Panel
FCP	Forest Conservation Plan
FD.C.s	Fire Department Connections
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIBI	Fish Index of Biological Integrity
FIRM	Flood Insurance Rate Maps
FR	Federal Register
FRA	Federal Railroad Administration
FSD	Forest Stand Delineation
FTA	Federal Transit Administration
FY	Fiscal Year
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
GMCC	Greater Mondawmin Coordinating Council
HABC	Housing Authority of Baltimore City
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HASP	Health and Safety Plan

HHS	Health and Human Services
HSIPR	High Speed Intercity Passenger Rail
HUD	(Department of) Housing and Urban Development
IBI	Index of Biological Integrity
IRM	Interagency Review Meeting
ICE	Indirect and Cumulative Effects
IOAC	Infrastructure and Operations Advisory Commission
IPaC	Information for Planning and Conservation
IRM	Interagency Review Meetings
LCD	Land Clearing Debris
LIHTC	Low-Income Housing Tax Credit
LOD	Limits of Disturbance
LRP	Land Redevelopment Program
LRT	Light Rail Transit
MAHNA	Matthew A. Henson Neighborhood Association
MARC	Maryland Area Regional Commuter
MDE	Maryland Department of Environment
MD DNR	Maryland Department of Natural Resources
MDOT	Maryland Department of Transportation
MDP	Maryland Department of Planning
MDTA	Maryland Transportation Authority
MERLIN	Maryland Environmental Resources and Land Information Network
MHT	Maryland Historical Trust
MIHP	Maryland Inventory of Historic Properties
MOA	Memorandum of Agreement
MPA	Maryland Port Administration
MPH	Miles per hour
MPN	Most Probable Number
MSA	Metropolitan Statistical Area
MTA	Maryland Transit Administration
MPWG	NEC Master Plan Working Group
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NB	Northbound
NCES	National Center for Educational Statistics
NE	Northeast
NEC	Northeast Corridor
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service

NPDES	National Pollutant Discharge Elimination System
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NS	Norfolk Southern Railway
NWI	National Wetlands Inventory
OCC	Operations Control Center
OCP	Oil Control Program
OHW	Ordinary High Water Mark
OSHA	Occupational Safety and Health Administration
OTR	Ozone Transport Region
PA	Programmatic Agreement
PAH	Polycyclic Aromatic Hydrocarbons
PASR	Preliminary Alternatives Screening Report
PCB	Polychlorinated Biphenyls
PM	Particulate Matter
PM	“Post Meridiem” or afternoon
PPV	Peak Particle Velocity
PRD	Project Review Decision
PRIIA	Passenger Rail Investment and Improvement Act
PSA	Preliminary Screening Assessment
PSD	Prevention of Significant Deterioration
PUD	Planned Unit Development
RATT	Residents Against the Tunnels
RCRA	Resource Conservation and Recovery Act
RHIC	Reservoir Hill Improvement Council
RIMS	Regional Input-Output Modeling System
RMS	Root Mean Square
ROD	Record of Decision
ROW	Right-of-Way
RPPV	Resultant Peak Particle Velocity
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SB	Southbound
SBA	Small Business Administration
SDP	Service Development Plan
SEL	Sound Exposure Level

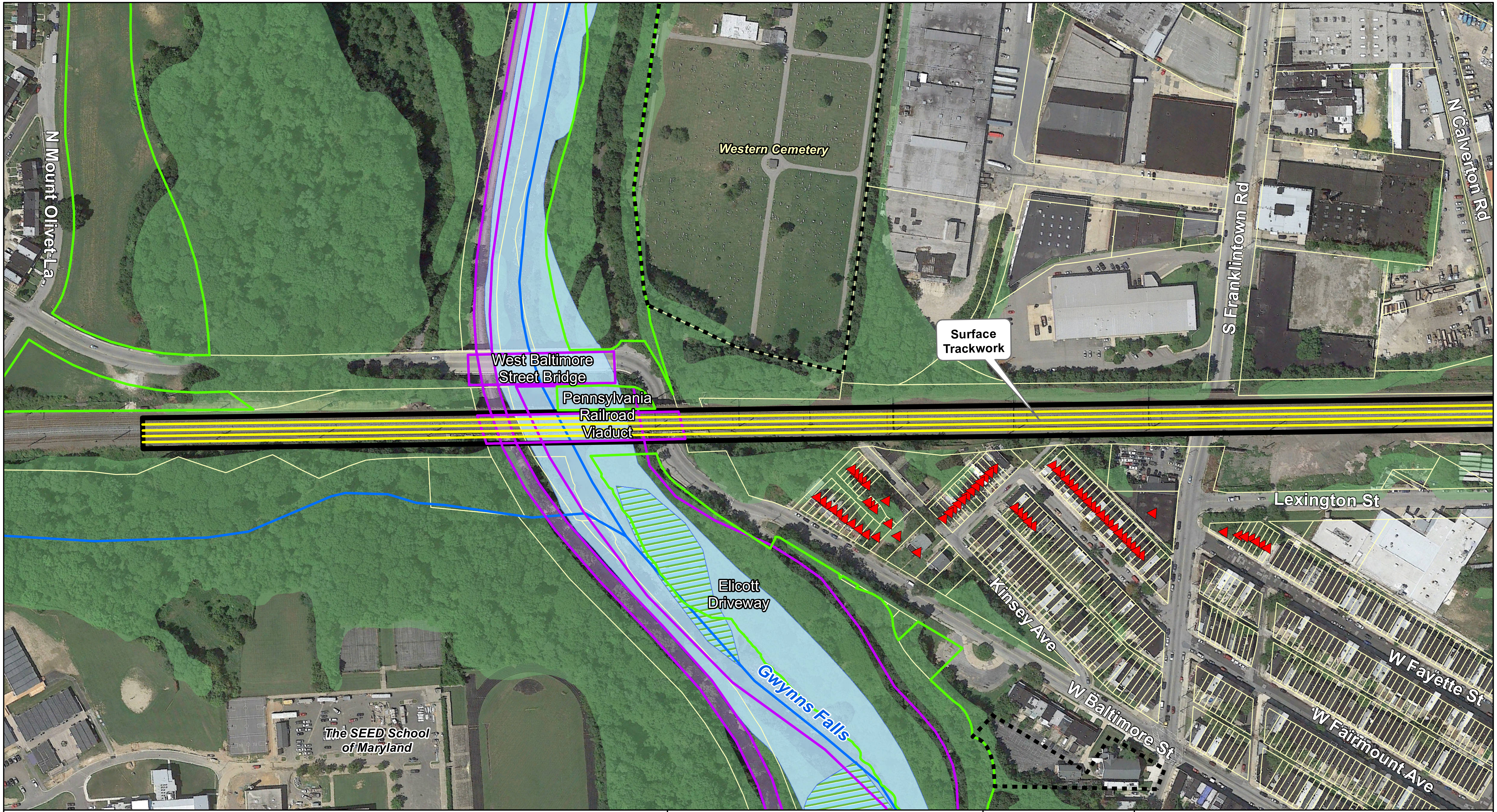
SEM	Sequential Excavation Method
SHA	State Highway Administration
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SOGR	State of Good Repair
SSA	Sole Source Aquifer
STB	Surface Transportation Board
TBM	Tunnel Boring Machine
TIP	Transportation Improvement Program
TMDL	Total Maximum Daily Load
TOD	Transit-Oriented Development
TSS	Total Suspended Solids
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDOE	United States Department of Education
USDOL	United States Department of Labor
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
VCP	Voluntary Cleanup Program
VdB	Velocity decibel
VOC	Volatile Organic Compound
WQA	Water Quality Analysis
WQL	Water Quality Limited
WSS	Web Soil Survey
WTY	Washington Terminal Yard
WUS	Washington Union Station
YOE	Year of Expenditure

Appendix A

Environmental Resource Impact Mapping

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation



- Alternative 3B - Preferred
- Limits of Surface Disturbance
- Bored Tunnel
- Proposed Ventilation Facility
- Proposed Noise Barriers
- Parcel Boundaries
- Individually Registered or Eligible Historic Resource
- Contributing to Historic District
- Historic Districts
- ▲ Potential Ground-Borne Noise Impact Site for Further Assessment
- ● Residential Building Displacement
- ● Community Facility Displacement
- ● Business Displacement
- ■ Moderate Noise Impact *
- ■ Severe Noise Impact *
- ▨ NWI Wetlands
- 100-Year Floodplain
- Parks
- Streams
- Tree Cover
- Community Facilities

* Prior to Mitigation

B&P Tunnel Project

Alternative 3B
Page 1 of 7

1 inch = 200 feet

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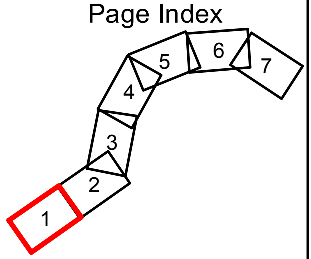

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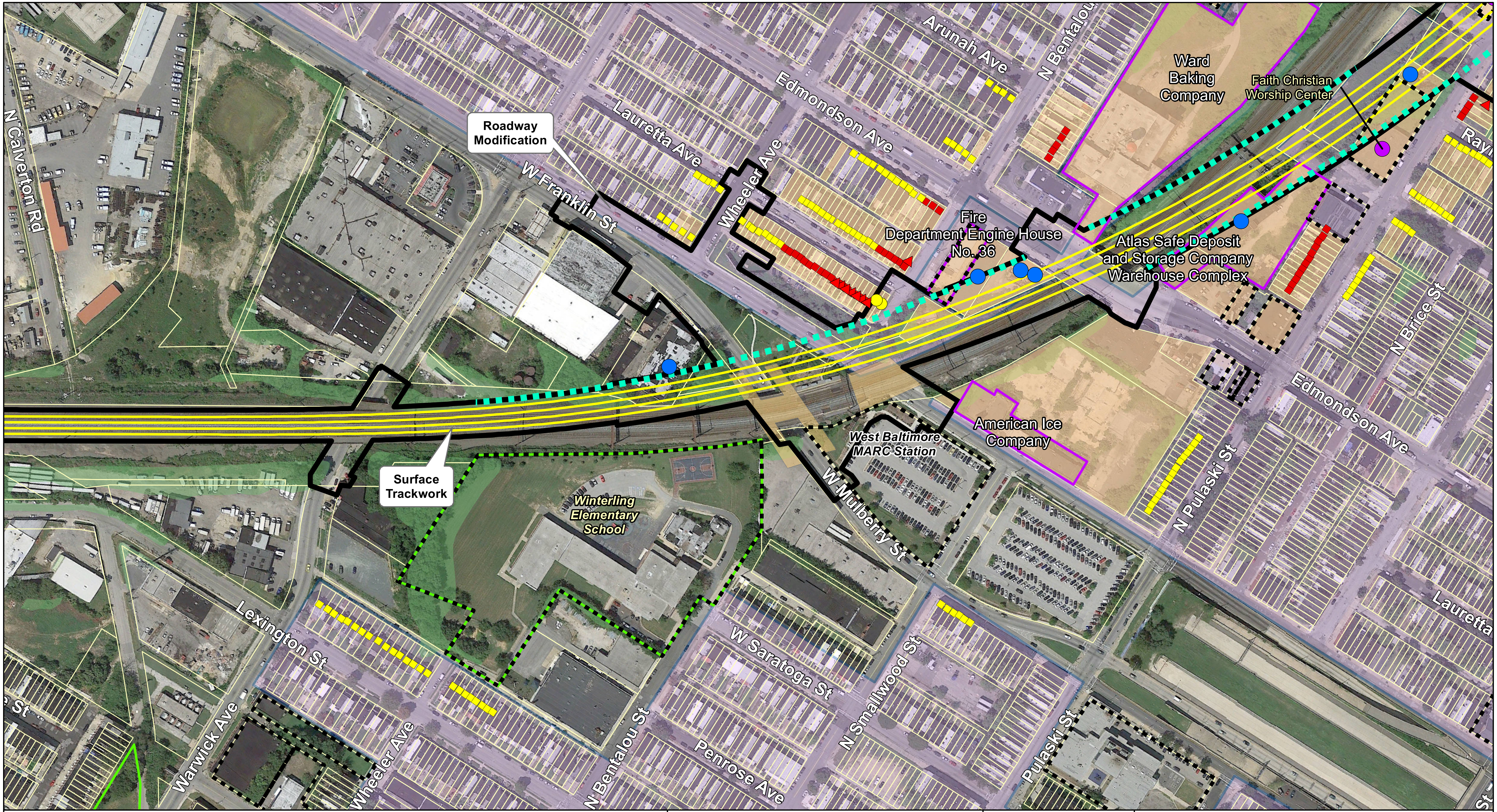

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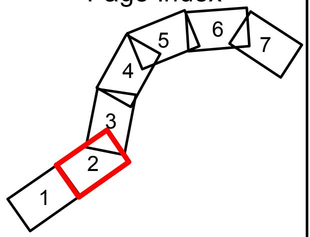

B&P TUNNEL PROJECT

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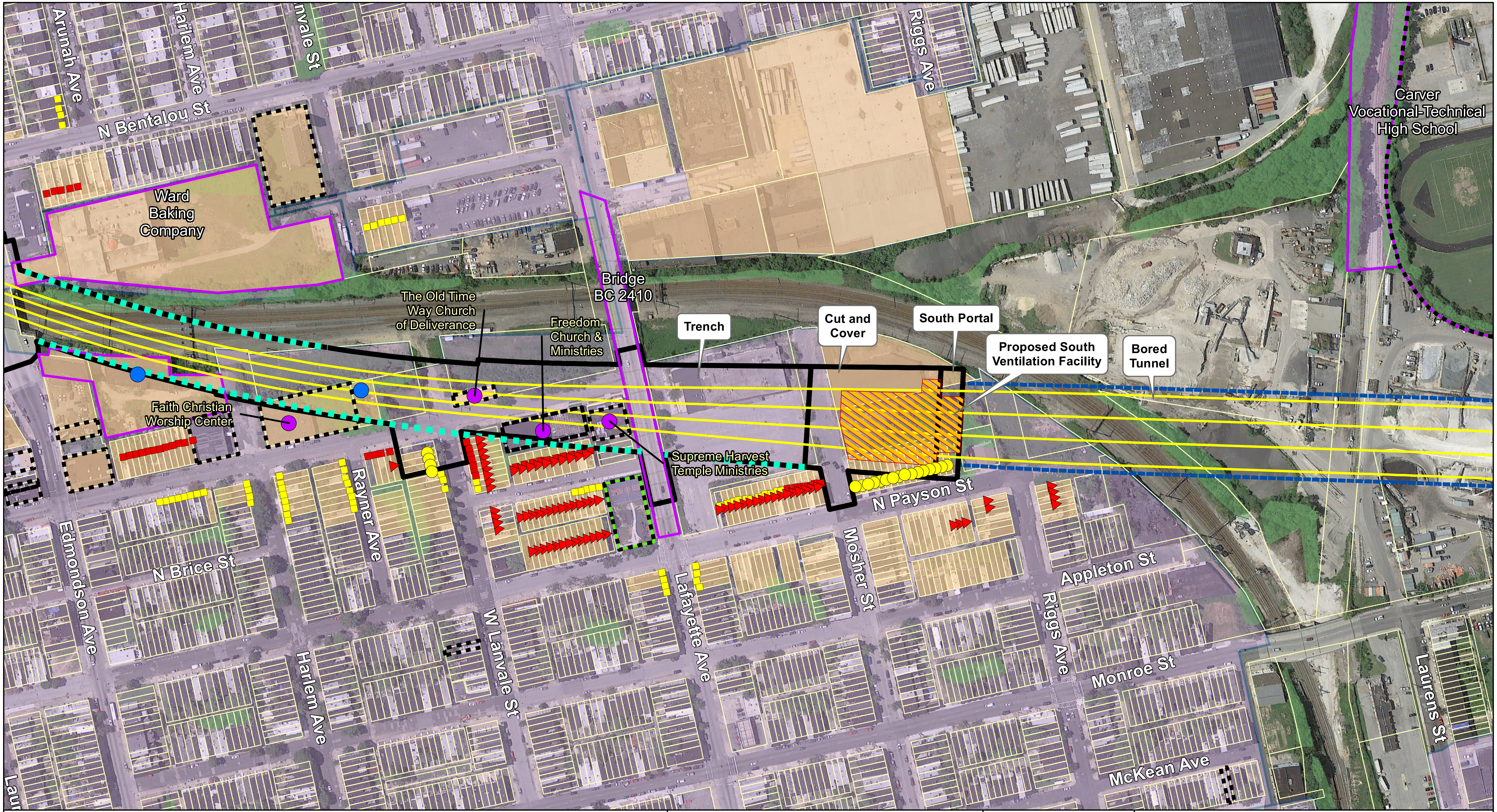
Federal Railroad Administration

Maryland Department of Transportation



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Alternative 3B
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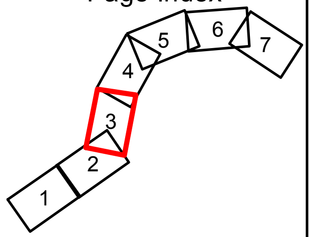

B&P TUNNEL PROJECT

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Federal Railroad Administration

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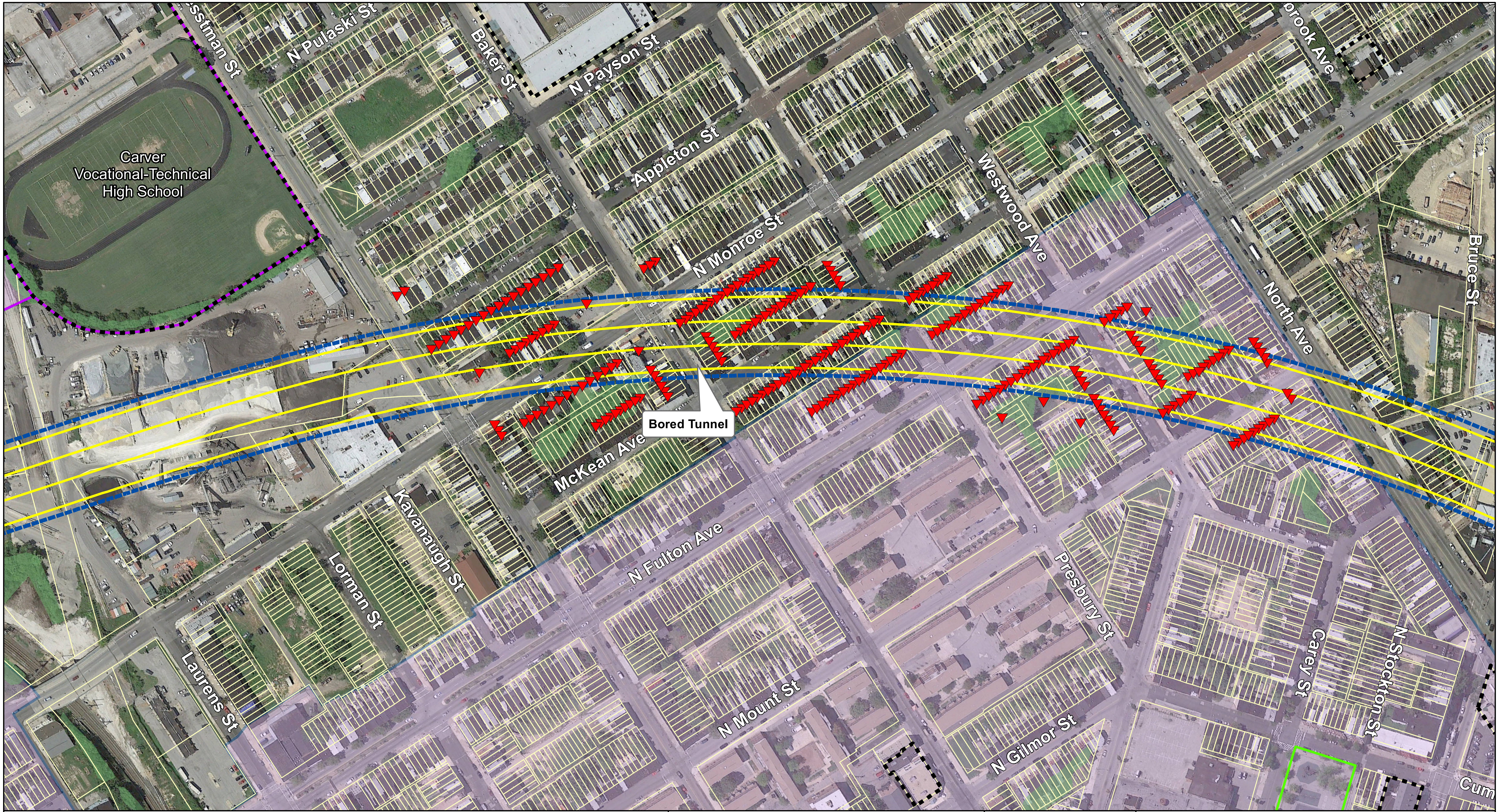

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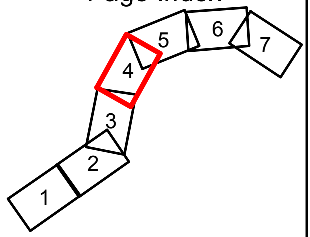

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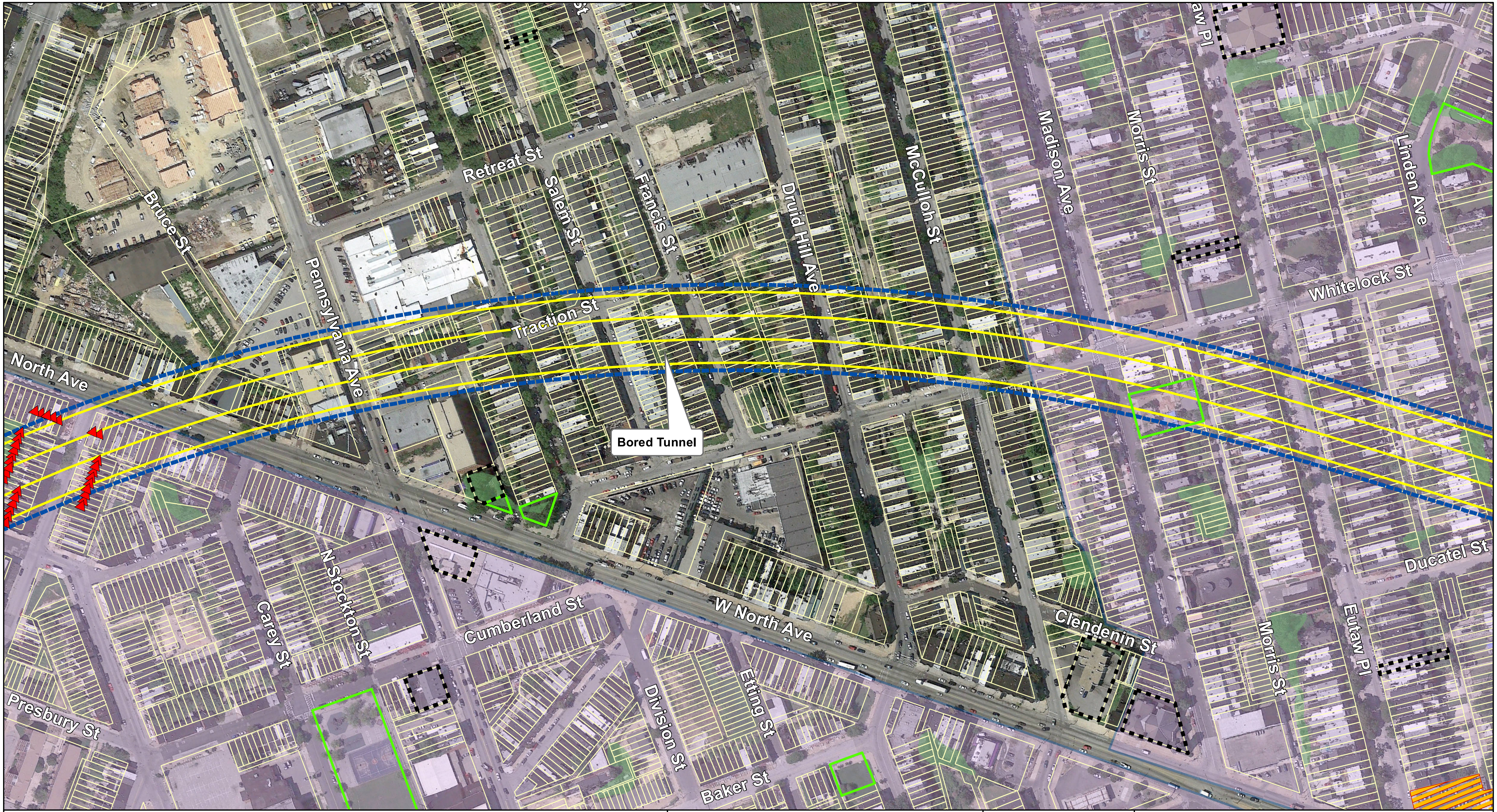
Federal Railroad Administration

Maryland Department of Transportation



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Alternative 3B
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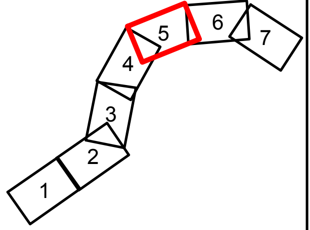
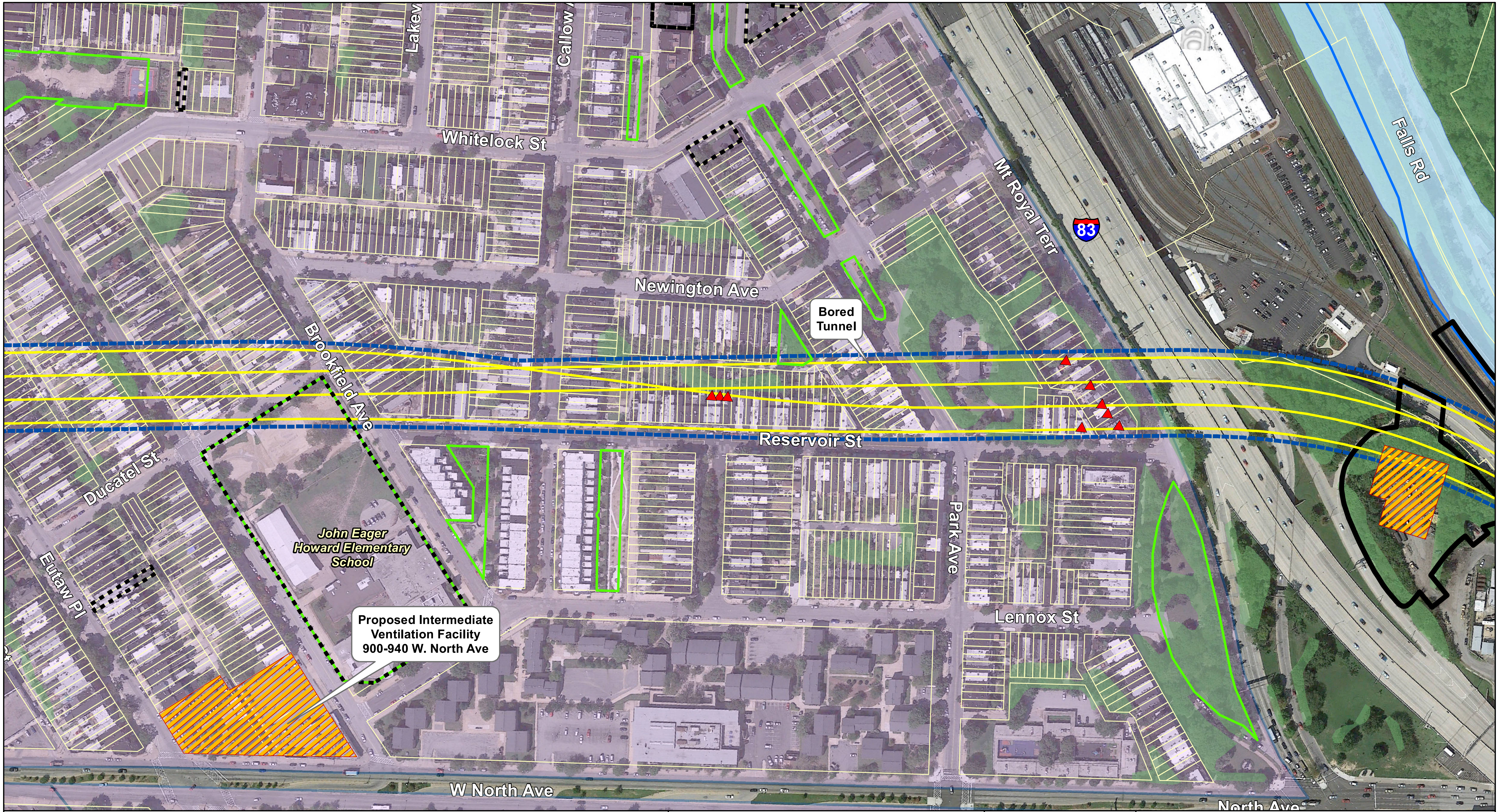


B&P TUNNEL PROJECT

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation



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B&P Tunnel Project

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Page 6 of 7

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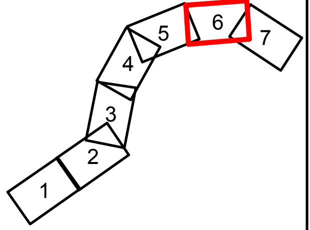
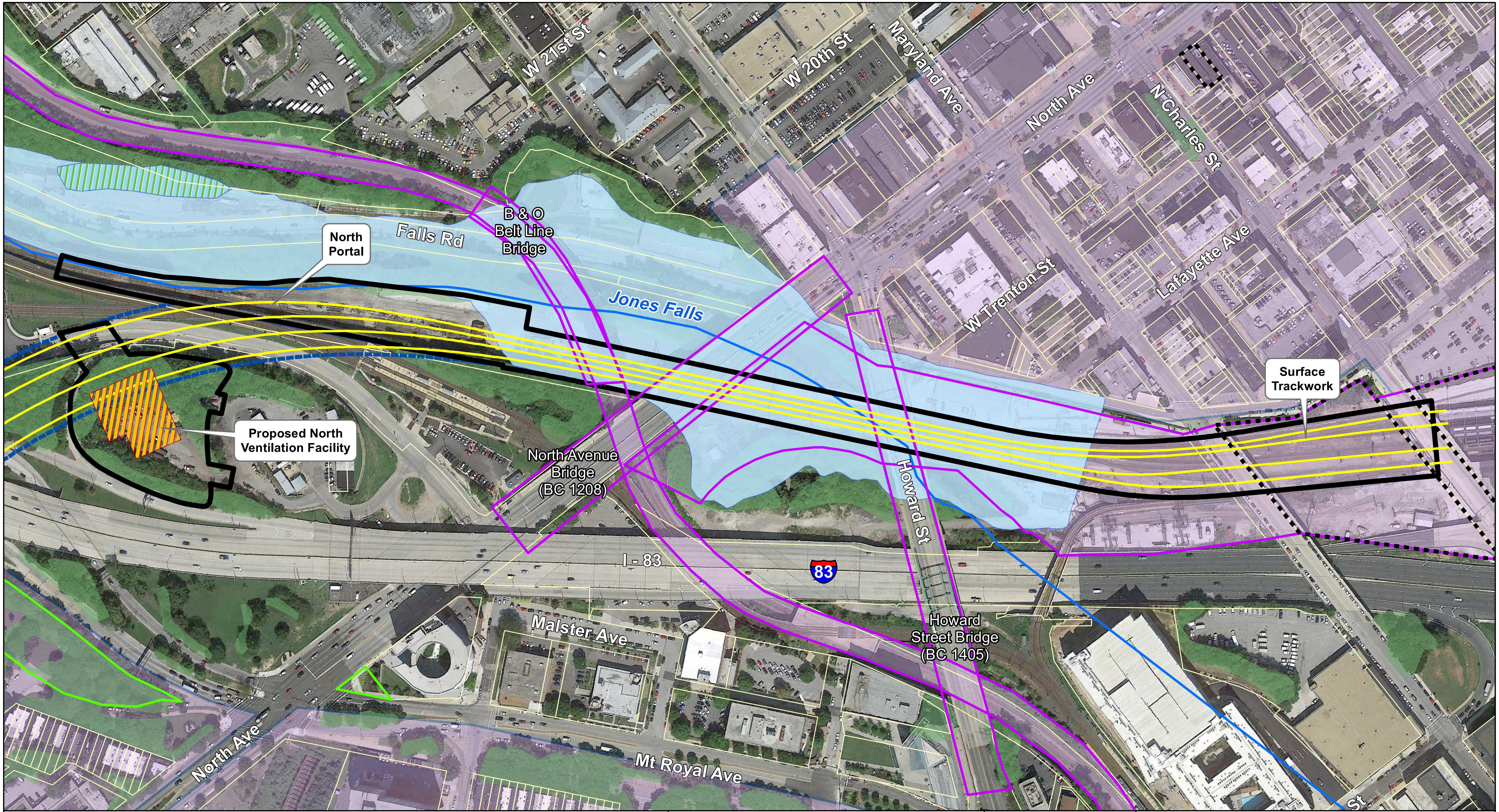


B&P TUNNEL PROJECT

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation



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B&P Tunnel Project

Alternative 3B
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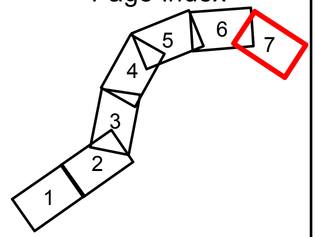


B&P TUNNEL PROJECT

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation

Appendix B

B&P TUNNEL PROJECT

Agency Correspondence

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department
of Transportation

Correspondence Related to the Initiation of the Environmental Impact Statement

U.S. Department
of Transportation

**Federal Railroad
Administration**

1200 New Jersey Avenue, SE.
Washington, D.C. 20590

JUN 11 2014

Subject: Agency Scoping Invitation
Baltimore and Potomac (B&P) Tunnel Project
Initiation of Environmental Impact Statement

Dear Agency Representative:

The Federal Railroad Administration (FRA), in coordination with the Maryland Department of Transportation (MDOT), is initiating development of an Environmental Impact Statement (EIS) for the B&P Tunnel Project pursuant to the National Environmental Policy Act (NEPA). As part of the development of the EIS, FRA is seeking your input to assist in determining and clarifying issues that are relevant to the scope of the study.

The B&P Tunnel is located between the West Baltimore MARC Station and Baltimore Pennsylvania Station along Amtrak's Northeast Corridor (NEC) (see attached map). This section of the NEC is used by Amtrak and MARC passenger trains, as well as Norfolk Southern freight trains. Opened in 1873, the tunnel is approaching the end of its useful service life. The intent of the study is to address tunnel deficiencies which hamper rail movement and create a low-speed bottleneck on a high-traffic section of the NEC. Note that the B&P Tunnel is not CSX Transportation's Howard Street Tunnel, which serves freight trains exclusively.

In compliance with NEPA, Section 106 of the National Historic Preservation Act of 1966 and other environmental laws and regulations, the study will consider potential impacts to surrounding communities and the environment and culminate in the development of the EIS. Various alternatives addressing study needs will be developed and evaluated, including the No Action Alternative as well as Build Alternatives, such as rehabilitation of the existing tunnel and a new tunnel on new alignment.

Any comments and suggestions your agency may have regarding factors that should be considered in the EIS would be appreciated. There are several ways your agency can participate in the scoping process:

1) Your agency may provide written comments via mail to:

   B&P Tunnel Project
   81 W. Mosher Street
   Baltimore, MD 21217

2) Your agency may provide comments via email to info@bptunnel.com.
3) If your agency would like to request an individual scoping meeting, please contact Michelle Fishburne by July 30, 2014 (contact information below).

A representative of your agency may attend the MDOT Interagency Review Meeting scheduled for **June 18, 2014 at 9:55 am** in the training rooms at the Maryland State Highway Administration's headquarters, 707 North Calvert Street in Baltimore. To attend this meeting, you should RSVP to Michelle Fishburne by June 17, 2014.

A public involvement program will take place throughout the NEPA planning process. The project will be presented to the public during an open house on **June 19, 2014**, as detailed on the B&P Tunnel Project's Web site (www.bptunnel.com).

Please provide any comments from your agency by **July 30, 2014**. If you have questions or need additional information, please contact Michelle Fishburne, FRA Environmental Protection Specialist, at (202) 493-0398 or michelle.fishburne@dot.gov. Thank you for your agency's time and participation in this project.

Sincerely,

David Valenstein

David Valenstein
Chief, Environment and Systems Planning Division
Federal Railroad Administration

Enclosure: Map

CSX
How tomorrow moves

Marco Turra – Director
CSX Transportation
500 Water Street, J315
Jacksonville, FL 32202
Office (904) 359-1099
Marco_Turra@csx.com

May 28, 2014

MDOT
JUN 06 2014
Freight Logistics

Harry Romano
Maryland Department of Transportation
Office of Freight and Multimodalism
7201 Corporate Center Drive
Hanover MD 21076

Dear Mr. Romano,

We understand that Maryland DOT and the Federal Railroad Administration are working on the preliminary engineering and preparation of environmental impact statements for replacing the Baltimore and Potomac (B&P) Tunnel. CSXT has trackage rights on the NEC between Washington and New York, including the B&P Tunnel, where CSX can operate four trains per day.

CSXT would welcome the opportunity to be included in the study. We believe that a joint study for the replacement of the B&P Tunnel would yield significant additional public benefit because new infrastructure could enable the movement of double stack freight trains on the I95 Corridor. To this end, CSXT would like to be included in the planning of the new or improved B&P Tunnel.

Thanks for the consideration and we look forward hearing back from you.

Sincerely,

Marco Turra

Cc: Jay Westbrook – CSXT AVP Passenger Operations
Dale Ophardt – CSXT AVP Engineering
Bob Gutman – CSXT AVP Network Planning

NORFOLK
SOUTHERN

Norfolk Southern Corporation
Three Commercial Place
Norfolk, VA 23510
Phone: 757-629-2838
Fax: 757-533-4884
Email: john.edwards@nscorp.com

John V. Edwards
General Director
Passenger Policy

July 24, 2014

Ms. Michelle W. Fishburne
Environmental Protection Specialist
USDOT FRA, Office of Program Delivery
1200 New Jersey Avenue SE., MS-20
Washington, DC 20590

Sent electronically to info@bptunnel.com

Re: Scoping for the Environmental Impact Statement (EIS) for the Baltimore & Potomac (B&P) Tunnel Project

Dear Ms. Fishburne:

On June 9, 2014, the Federal Railroad Administration (FRA) published its Notice of Intent to Prepare an Environmental Impact Statement (EIS) related to the Baltimore & Potomac (B&P) Tunnel Project along the Amtrak Northeast Corridor (NEC) in Baltimore, MD. Norfolk Southern appreciates the opportunity to provide these brief comments on the scope of the EIS for this important project.

Norfolk Southern operates freight trains on the NEC alongside Amtrak. The agricultural and consumer goods, metals and forest products it moves along the NEC help to fuel the economies of states from the mid-Atlantic to the Northeast and beyond. Much of the traffic it delivers to customers along the NEC originates in the Midwest and Western United States. Much of the traffic originating along the NEC is delivered to businesses, manufacturers, and wholesalers throughout the United States.

The NEC between Washington DC and Boston is a vital national asset for the transportation of goods in both domestic and international commerce, as well as for passenger transportation. Norfolk Southern welcomes the opportunity to work with the Federal Railroad Administration, the Maryland Department of Transportation (MDOT), and Amtrak to ensure that this portion of the NEC, which dates from 1873, is brought into the 21st century. It is important to eliminate a significant chokepoint in this high traffic section of the Northeast freight and passenger rail corridor.

In all cases and at all locations within the study area, impacts to freight rail must be considered on all segments of the proposed route. Just as the current infrastructure constrains passenger operations, so has that infrastructure constrained current and potential freight operations, to the detriment of the people and economies of the NEC-served states. Adequate infrastructure is needed to prevent rail conflicts and ensure fluid operations for both passenger and freight operations. The potential for clearing the B&P Tunnel for high and wide loads (including those involving intermodal double stack), and the potential to replace or supplement the US Department of Defense Strategic Rail Corridor Network (STRACNET) route now utilizing the Howard Street Tunnel should be incorporated into the EIS.

Again, Norfolk Southern appreciates the forum for making comments to the scope of the B&P Tunnel EIS. We look forward to remaining involved in this process. We hope to help MDOT and FRA realize their vision for improved transportation options in Maryland and along the NEC.

Sincerely,

John V. Edwards

Maryland Department of Transportation
The Secretary's Office

Martin O'Malley
Governor

Anthony G. Brown
Lt. Governor

James T. Smith, Jr.
Secretary

October 10, 2014

Mr. Joseph C. Szabo
Administrator
Federal Railroad Administration
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington DC 20590

Dear Administrator Szabo:

As your partner on the $60 million High-Speed Intercity Passenger Rail (HSIPR) grant for preliminary engineering (PE) and National Environmental Policy Act (NEPA) work on Amtrak's Baltimore and Potomac (B&P) Tunnel in Baltimore City, I wanted to make you aware of a recent discussion I had with Amtrak President Joseph Boardman and Federal Railroad Administration (FRA) staff regarding this regionally significant project.

The discussion focused on freight capacity within the new or rehabilitated B&P Tunnel. Both Norfolk Southern (NS) and CSX Transportation, Inc. (CSX) hold rights to move freight on the Northeast Corridor, including the B&P Tunnel, and have expressed interest in addressing freight needs in the new or rehabilitated tunnel. With NS and CSX cooperation, current and future goods movement may significantly benefit from the ability of a new or rehabilitated B&P Tunnel to support double-stack intermodal and over-dimensional cargo to and from the Port of Baltimore. During our conversation, Amtrak indicated their willingness to work with the Maryland Department of Transportation (MDOT) on an analysis to support a future B&P Tunnel that could also accommodate double-stack intermodal freight.

Amtrak and MDOT discussed the need to evaluate the connecting rail network to determine what additional clearances may be required before NS and CSX could operate double-stack intermodal freight into/out of the Port of Baltimore. Because of the constraints associated with the federal grant and project limits, MDOT will convene a working group, separate from the B&P Tunnel HSIPR study, to advance these investigations. MDOT anticipates the working group will include representatives from FRA, MDOT, Amtrak, and the two freight railroads.

We look forward to working with you and your staff as MDOT advances these efforts. If you have any questions or concerns, please do not hesitate to contact Mr. Leif A. Dormsjo, MDOT Deputy Secretary for Planning and Project Management, at 410-865-1002 or by email at ldormsjo@mdot.state.md.us. Deputy Assistant Dormsjo will be happy to assist you. Of course, you should feel free to contact me directly.

Sincerely,

James T. Smith, Jr.
Secretary

cc: Mr. Joseph H. Boardman, President, Amtrak
Mr. Leif A. Dormsjo, Deputy Secretary for Planning and Project Management, MDOT
Mr. Paul Nissenbaum, Associate Administrator for Railroad Policy and Development, FRA

Correspondence Related to the Preliminary Alternatives Screening Report

Zimbra **brolf@rkk.com**

Fwd: B&P Tunnel-Draft Preliminary Alternatives Screening Report

From: "Alaina McCurdy" <McCurdy.Alaina@epa.gov>
To: "michelle fishburne" <michelle.fishburne@dot.gov>, "Eric Almquist" <ealmquist@rkk.com>
Sent: Monday, November 10, 2014 10:07:27 AM
Subject: B&P Tunnel-Draft Preliminary Alternatives Screening Report

Hi Michelle and Eric,

Thank you for coordinating with EPA on the B&P Tunnel Draft Preliminary Alternatives Screening Report. We appreciate your efforts to keep us engaged in this project and for allowing us the opportunity to provide you with comments for your consideration. If possible, please forward this message to the appropriate MDOT contact for this project.

Below are some comments for your consideration on the report. Overall, the alternatives examined were clearly explained as were the various screening criteria. Of the 15 alternatives considered, four are recommended to be advanced for further study in the EIS. These include the no build alternative, restore/rehabilitate the existing tunnel, and two new location alternatives. While it was largely apparent why many of the alternatives considered were recommended to be dropped from further consideration, it was not always clear how each of the alternatives measured up against each of the identified screening criteria. We did see the screening criteria laid out for each alternative in Table 1, which we found very useful. We'd suggest including this information more explicitly in the narrative analysis and recommendation sections for each alternative in order to make it more clear throughout the document how alternatives 3-15 met each of the identified screening criteria. Currently for alternatives 3-7, the analysis sections only present reviewed and summarized information from the 2011 Baltimore's Railroad Network: Analysis and Recommendations report as opposed to focusing on how the alternatives were evaluated against the criteria. Again, we suggest including a more clear presentation of how the alternatives were evaluated against each of the screening criteria in order to further improve the report.

One of the new location alternatives that was evaluated and recommended to be carried forward was Alternative 11: Robert Street South. The description of this alternative states that it would be a combination of underground tunnel, an aerial structure and at-grade sections. The map provided of this alternative currently shows the alignment and portal locations. If possible, we'd recommend noting the locations of the aerial structures and at-grade sections on the existing map, or adding a new map to show these areas. While we understand the provided discussion and rationale for retaining this alternative, if it hasn't already been considered, we'd recommend that FRA and MDOT consider evaluating a slightly modified Alternative 11 against the identified screening criteria. We're suggesting a modified Alternative 11 in addition to the other alternatives in an effort to think ahead about potential impacts to the community surrounding the south portal location. If possible, we'd suggest, that if it hasn't already been evaluated already, taking a closer look at potential slight alignment shifts or modifications to the south portal location and connection to the existing Amtrak corridor of Alt 11 to the north by a few blocks. It appears that if some modification were possible, the portal location could have potentially fewer adverse impacts to the community as well as reducing the length of track between the portal and existing track. EPA encourages FRA and MDOT to consider if efforts can be made to evaluate the south portal location in closer detail either further into the design of Alt 11, or evaluating at this stage a slightly modified Alt 11 in order to reduce adverse community impacts.

I also had a few questions in order to try to better understand Alternative 12: Robert Street North. I understand this alternative has some portion of cut and cover, however could you clarify the length, extent, and location of the cut and cover operation that would be required for this alternative? I was also interested in finding out where or for what length of this alternative would not meet the minimum tunnel separation between the existing MTA Metro rail line and proposed tunnel. Has any evaluation been conducted to investigate if realigning or slightly modifying the southern portal to the north would allow for greater tunnel separation and maintenance of operations through the existing tunnel?

The screening report considers environmental justice throughout the document. We encourage FRA and MDOT to conduct robust community outreach for this project, as it appears at this preliminary stage that many of the potential adverse impacts associated with the project could be to the community. We are aware that there are a number of large, influential churches in the vicinity of the southern portal locations, as well as community organizations, and suggest that project outreach include these organizations to the extent possible.

Again, thank you for coordinating with EPA on this project. If you have any questions or would like to discuss EPA's comments on the Preliminary Alternatives Screening Report, please feel free to contact me. We would certianly welcome the opportunity to discuss our comments with you in greater detail.

Sincerely,

Alaina

Alaina McCurdy
Office of Environmental Programs
U.S. EPA Region 3
1650 Arch Street
Philadelphia, PA 19103
phone: (215)814-2741
fax: (215)814-2783

Correspondence Related to Cultural Resources (includes additional consulting parties)

Sustainable Attainable

Maryland Department of Planning
Maryland Historical Trust

August 4, 2014

David Valenstein
Chief, Environment and Systems Planning Division
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Baltimore and Potomac (B&P) Tunnel Project
Agency Scoping/Initiation of Section 106 Review
Baltimore City, Maryland

Dear Mr. Valenstein,

The Maryland Historical Trust (Trust), a division of the Maryland Department of Planning, received the Federal Railroad Administration's (FRA) initiation of the Environmental Impact Statement and Section 106 review process for the above-referenced project. We look forward to working with your agency and other involved parties to successfully complete the preservation requirements for the proposed undertaking.

The FRA will soon need to initiate detailed cultural resources studies so that significant historic properties within the project area are fully considered during the project planning process. We encourage early and frequent coordination with our office to ensure that the investigations are commensurate with the scale of the undertaking and consistent with our standards and guidelines. Considerable information already exists regarding identified historic and archeological resources in the project vicinity, as a result of multiple prior investigations for various projects. For example, the Baltimore & Potomac Railroad / Philadelphia, Baltimore & Washington Railroad (MIHP No. B-5164) has already been determined eligible for listing in the National Register of Historic Places. This evaluation was conducted in 2012 and includes the Baltimore & Potomac Tunnel. A copy of the determination of eligibility (DOE) form is included as an attachment to this letter. Our inventory also includes numerous individual structures, bridges and historic districts within the project area for the Baltimore & Potomac Tunnel project. Please consult the Trust's library and staff as part of the detailed investigations to obtain the existing survey documentation. We look forward to working with the project team to ensure a reasonable and appropriate level of effort is performed for the current project.

We suggest that the FRA continue to identify opportunities to involve the general public and any other interested parties throughout the project planning process. Trust staff can provide assistance in identifying consulting parties. Thank you for initiating consultation with the Trust early in project planning for this undertaking. If you have questions or require any assistance, please contact me (for the historic built environment) at tim.tamburrino@maryland.gov \ 410-514-7637 or Beth Cole (for archeology) at beth.cole@maryland.gov \ 410-514-7631.

Sincerely,

Tim Tamburrino
Preservation Officer

TJT / 20140
Attachment
cc: Michelle Fishburne (FRA) via email
B&P Tunnel Project Office

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor

Richard Eberhart Hall, AICP, Secretary
Amanda Stakem Conn, Esq., Deputy Secretary

Maryland Historical Trust - 100 Community Place - Crownsville - Maryland - 21032
Tel: 410.514.7600 - Toll Free: 1.800.756.0119 - TTY users: Maryland Relay - MHT.Maryland.gov

MARYLAND HISTORICAL TRUST
DETERMINATION OF ELIGIBILITY FORM

NR Eligible: yes ___
no ___

Property Name: Baltimore & Potomac RR/Phil., Baltimore & Wash. RR
Inventory Number: B-5164

Address: Between Baltimore City/County Line & Penn Station (includes the Baltimore & Potomac Tunnel)
Historic district: ___ yes X no

City: Baltimore
Zip Code: see below
County: Baltimore City

USGS Quadrangle(s): Baltimore West

Property Owner: National Railroad
Tax Account ID Number: N/A

Tax Map Parcel Number(s): ___
Tax Map Number: ___

Project: West Baltimore MARC Station Project
Agency: Maryland Transit Administration

Agency Prepared By: RK&K, LLP

Preparer's Name: Christeen Taniguchi
Date Prepared: 5/1/2012

Documentation is presented in: Enoch Pratt Library--Maryland Room, Maryland Historical Society, ProQuest Historical Newspapers Database, Sanborn Fire Insurance Maps

Preparer's Eligibility Recommendation: X Eligibility recommended ___ Eligibility not recommended

Criteria: X A ___ B X C ___ D
Considerations: ___ A ___ B ___ C ___ D ___ E ___ F ___ G

Complete if the property is a contributing or non-contributing resource to a NR district/property:

Name of the District/Property: ___

Inventory Number: ___
Eligible: ___ yes
Listed: ___ yes

Site visit by MHT Staff ___ yes X no
Name: ___
Date: ___

Description of Property and Justification: *(Please attach map and photo)*

Architectural Description

This documentation expands upon a Determination of Eligibility (DOE) Form and an Addendum completed for the following sections of the Philadelphia, Wilmington & Baltimore (PW&B) Railroad in Baltimore City:

DOE Form -- Between Boston and O'Donnell streets, west of S. Haven Street, running southwest (eligibility concurred by the Maryland Historical Trust [MHT] on October 6, 2008)

Addendum -- Between O'Donnell Street and the Bayview Yard (eligibility concurred by MHT on June 9, 2010)

This DOE Form evaluates the National Register of Historic Places (NRHP) eligibility of the Baltimore & Potomac (B&P) Railroad/Philadelphia, Baltimore & Washington (PB&W) Railroad segment between the Baltimore City/Baltimore County line (in the community of Violetville) at the southwest to Baltimore's NRHP-listed Pennsylvania Station (B-3727) at the northeast. The

MARYLAND HISTORICAL TRUST REVIEW

Eligibility recommended X **Eligibility not recommended** ___

Criteria: X A ___ B X C ___ D
Considerations: ___ A ___ B ___ C ___ D ___ E ___ F ___ G

MHT Comments:

Reviewer, Office of Preservation Services
9/11/12
Date

Reviewer, National Register Program
9/11/12
Date

station was not part of this evaluation. The evaluated alignment was originally built in 1872 as the B&P Railroad, merging with the PW&B Railroad to create the PB&W Railroad in 1902. Please note that the zip codes this railroad alignment runs through are the following (from southwest to northeast): 21229, 21223, 21216, 21217, and 21201.

The evaluated alignment includes the following building and structures:

•The Baltimore & Potomac Tunnel is a brick round arch 7,499-foot-long tunnel with rough-cut stone retaining walls, beginning at N. Gilmor Avenue and Winchester Street in west Baltimore, continuing northeast and emerging just south of W. North Avenue near Interstate 83. The two track tunnel includes two round arch bridges, one carrying N. Fulton Avenue and the second carrying N. Vincent Street, leading up to the tunnel entrance at the southwest end. A builder's stone with the build date, the B&P name, and the president, vice-president, and directors names, is apparently mounted on a retaining wall adjacent to one of the tunnel entrance (completed in 1873)

•Four railroad tracks at the southwest portion of the segment until about W. Lafayette Avenue, and double tracks continuing northeast and into the B&P Tunnel, consisting of track beds with ballast and siding along some segments (widened to three and four tracks in the early 1930s; tracks likely replaced over the years)

•Overhead catenary lines along the alignment with what appears to be a traction power substation located at the northern end of the evaluated segment (circa 1935)

•Railroad bridges (listed from southwest to northeast):
1) one reinforced concrete arch bridge with metal railing over Gwynns Falls Park, Western Maryland Railroad, and W. Baltimore Street (built in 1914)
2) two steel-plate viaducts with concrete retaining walls over N. Franklintown Road and N. Warwick Avenue (built in the circa 1920s)
3) one reinforced concrete bridge, with Art Deco details and a cast-in-place image of the Pennsylvania Railroad's keystone symbol on either side, located over W. Mulberry Street (built in the circa 1920s)
4) one steel and concrete bridge with rough-cut stone retaining walls, located over W. Franklin Street (the steel bridge supports appear to date to the nineteenth century, with a concrete circa 1980s West Baltimore MARC Station platform above)

•Two-story brick Gwynn Junction Tower located on the northwest side of the 1914 bridge's southwest end. The building rests on a masonry base and is sheltered by a pyramidal hipped roof clad with asphalt shingles and a red brick chimney. The building has remnants of wood window sashes and frames. It is currently not being used, likely due to there no longer being interlocking tracks at this location, and in poor condition (built in the circa early twentieth century)

•The West Baltimore MARC Station is an open platform located west of N. Smallwood Street between W. Mulberry and W. Franklin streets (built in the circa 1980s)

•Various ancillary buildings including sheds located along the tracks at the northern end of the evaluated segment (appear to be mostly modern)

Note that Amtrak prohibited access to of the alignment; all observations and photographs were made from public rights-of-way due to this legal restriction.

MARYLAND HISTORICAL TRUST REVIEW

Eligibility recommended ___ **Eligibility not recommended** ___

Criteria: ___A ___B ___C ___D **Considerations:** ___A ___B ___C ___D ___E ___F ___G

MHT Comments:

Reviewer, Office of Preservation Services **Date**

Reviewer, National Register Program **Date**

Historic Context

The evaluated segment of the Philadelphia, Baltimore & Wilmington (PB&W) Railroad was originally part of the Baltimore & Potomac (B&P) Railroad alignment completed in 1872 that travelled southwest from Baltimore, Maryland, to Washington, D.C. The B&P Railroad Company was chartered on May 6, 1853, after significant lobbying headed by Colonel William D. Bowie of Prince George's County. During an era when the railroad was quickly expanding and replacing ferry transportation, southern Maryland farmers and plantation owners saw rail as a necessary means to transport their agricultural goods and stay connected to the rest of the east coast. Railroad planning was delayed, however, until December 1858 when a board of directors and corporate officers were put into place. A survey of the proposed alignment was conducted in the following year. Pope's Creek at the Potomac River in Charles County was selected as the southern terminus, about 75 miles south of Baltimore. A ferry was planned to link Pope's Creek to Richmond, Virginia, via the Richmond, Fredericksburg & Potomac Railroad terminal in Aquia Creek, Virginia.

B&P Railroad construction began in 1861, and was slow due to limited capital and the Civil War's interference. After the war, Oden Bowie, son of William Bowie and president of the B&P Railroad Company, approached the Baltimore & Ohio (B&O) Railroad for funding assistance, but was denied. Instead, the big push for construction began when the Pennsylvania Railroad (PRR) and Northern Central Railway (NCR) acquired B&P Railroad in 1867. The PRR had earlier purchased NCR in their desire for growth southward that ultimately connected their tracks to Baltimore. Further growth linking Baltimore to Washington, D.C., however, was not immediately possible. Due to a relationship between the B&O Railroad and the Maryland state legislature since the mid-1830s, the B&O had a monopoly over rail connections between Baltimore and the nation's capital. The B&P Railroad's company charter allowed for lateral branches up to 20 miles long, a provision originally put into place to appease nearby towns afraid of being bypassed by the main alignment. The PRR saw this as their opportunity to circumvent the B&O and state, and establish their rail connection from Baltimore to Washington, D.C. The alignment would go from Baltimore to Huntington (today Bowie), Maryland, with its main alignment ending at Pope's Creek. The line would also connect to Washington, D.C. Via a "branch" called the Washington City or Magruder Branch. Oden Bowie used his position in the Maryland legislature to push this railroad construction through the legislature. Governor of Maryland from 1869 to 1872, Bowie would remain president of the B&P Railroad Company until his death in 1904.

B&P Railroad construction went into full force during the spring of 1868, with 35 miles of line graded by the end of the year. The B&P Railroad "branch" between Baltimore and Washington, D.C., opened on July 2, 1872, and the main alignment to Pope's Creek opened on January 1, 1873. The railroad cost nearly $10 million. Although technically a branch, the alignment to the more heavily populated and larger city was obviously the primary route for the B&P Railroad. This is evident when comparing the lavish masonry Victorian Gothic Revival train station (now demolished) originally built on the National Mall at the Washington, D.C. terminus, with the small and modest wood station at Pope's Creek.

A significant engineering achievement of the alignment was the double-track brick B&P Tunnel, located to the west of Baltimore's Pennsylvania Station. A tunnel became the solution since condemnation proceedings for the right-of-way required for double-tracking would be too expensive in this heavily developed part of the city. Constructed between 1871 and mid-1873, this 7,499-foot long tunnel was built primarily using the cut-and-cover method, along with some drilling. Constructed on a significant grade, the tunnel was a challenge during the steam engine era. Smoke-blowing machinery was installed in the upper portion of the portal and a 160-foot smoke jack (demolished in 1969) was built on Eutaw Place to deal with this problem.

B&P's first Baltimore station was the Italianate Revival style Pennsylvania Avenue Station, built over an open cut within the tunnel route. When the B&P Railroad line was first completed, passengers in Baltimore needed to transfer via coach to continue north. The original Union Tunnel (an adjacent tunnel later built in 1933) and first Union Station (no longer extant), however, were

MARYLAND HISTORICAL TRUST REVIEW

Eligibility recommended ___ **Eligibility not recommended** ___

Criteria: ___A ___B ___C ___D **Considerations:** ___A ___B ___C ___D ___E ___F ___G

MHT Comments:

____

Reviewer, Office of Preservation Services **Date**

____

Reviewer, National Register Program **Date**

completed soon thereafter, allowing for continued travel to the east on Union Railroad tracks to the Bayview junction where connections could be made with the Philadelphia, Wilmington & Baltimore (PW&B) Railroad. Access to these connections meant a continuous PRR link, including New York, Philadelphia, Baltimore, and Washington, D.C. P&B would soon utilize Baltimore's Union Station, with a second, larger Union Station replacing the original completed in 1886. The B&P Railroad merged with the PW&B Railroad in 1902 to create the PB&W Railroad, the new name also given to the evaluated alignment. The second Union Station building was replaced in 1911 by the Classical Revival building standing today, renamed Pennsylvania Station in 1928. The Edmondson Avenue Station was built in 1919, located at the intersection of the alignment with Edmondson Avenue. The ultimately underutilized station served local trains; the brick building still stands, although today it houses a restaurant. Junction towers were constructed in the circa early twentieth century, including one that still stands today (although abandoned) called the Gwynn Junction Tower at Gwynns Falls Park. The B&P Junction Tower built near Pennsylvania Station closed in 1987 and appears to no longer exist. Plans were announced in 1928 to electrify the PW&B Railroad and commence with an improvement project that included the elimination of grade crossings, widening the main line to three and four tracks, and new B&P and Union tunnels. The evaluated line was electrified by 1935. Thanks to financial assistance from the Public Works Administration, PW&B eliminated the grade crossings, widened the main line, and built the new Union Tunnel. A new B&P Tunnel, however, proved to be too expensive.

The PRR absorbed the New York Central Railroad, creating the Penn Central Transportation Company in 1968, and continued to own and operate the evaluated alignment. Although Penn Central declared bankruptcy two years later, it continued to operate the PB&W Railroad until Amtrak bought most of the railroad assets, including the evaluated alignment, in 1976. Today the alignment is an active part of Amtrak's Northeast Corridor. The MARC commuter trains, serving the Baltimore-Washington metropolitan area, have utilized the alignment since 1983; the West Baltimore MARC Station is located at 400 N. Smallwood Street. Norfolk Southern freight trains also have trackage rights to the alignment.

Significance Evaluation

The B&P Railroad/PB&W Railroad alignment, between the Baltimore City and County line to the west and Penn Station to the east, was evaluated for significance under National Register of Historic Places (NRHP) Criteria A, B, and C, using the guidelines set forth in the National Register Bulletin "How to Apply the National Register Criteria for Evaluation." The property was not evaluated for eligibility under Criterion D as part of this assessment.

The evaluated segment is a critical component of the B&P Railroad (later the PB&W Railroad) alignment that established a reliable connection between Baltimore and Washington, D.C., and ultimately to Philadelphia and New York, for the Pennsylvania Railroad. The segment was built during an era when the railroad became critical for both passenger and freight service, contributing to the continued growth and prominence of industrial cities like Baltimore. This link also connected to rural southern Maryland where people could now have better access to efficient transportation, and their agricultural products could be easily transported to major commercial markets like Washington, D.C, Baltimore and beyond. The railroad alignment has seen some modifications, most notably bridge replacements and catenary line additions during the first decades of the twentieth century; however, these changes do not diminish the railroad alignment's association with this historic context, and instead enhances it, because the importance of this railroad alignment to the social, economic, commercial, industrial and agricultural development of Baltimore and southern Maryland continued well into the twentieth century. Therefore, the B&P Railroad/PB&W Railroad is eligible under Criterion A.

Research has not shown that the alignment is associated with the lives of individuals significant in the past. Therefore, this segment of the B&P Railroad/PB&W Railroad is not eligible under Criterion B.

MARYLAND HISTORICAL TRUST REVIEW

Eligibility recommended ___ **Eligibility not recommended** ___

Criteria: __A __B __C __D **Considerations:** __A __B __C __D __E __F __G

MHT Comments:

Reviewer, Office of Preservation Services **Date**

Reviewer, National Register Program **Date**

This B&P Railroad/PB&W Railroad segment opened in 1872. Although its tracks have likely been replaced over time, and related structures such as the smoke jack for the B&P tunnel have been demolished, the line retains many character-defining features, including its historic alignment, tunnel, early twentieth century railroad bridges, viaducts and junction tower, and circa 1935 catenary lines. In particular, the 1873 tunnel is a significant product of engineering that is 7,499-foot long, extending from west Baltimore to Pennsylvania Station. This tunnel is largely unchanged, retaining its original masonry construction, including its round arched openings, and its dual track alignment. Other features, such as the bridges at Gwynns Falls Park and Mulberry Street are also intact from their original construction. The bridge over the park is a sizeable reinforced concrete arch structure spanning the Western Maryland Railroad and W. Baltimore Street. Also made of reinforced concrete, the Mulberry Street bridge not only has Art Deco style details, but also carries imprints of the Pennsylvania Railroad's keystone logo. This railroad alignment is distinctive enough to be considered a true representative of railroad construction. Therefore, the B&P Railroad/PB&W Railroad is eligible under Criterion C.

Based on the evaluated criteria, this segment of the B&P Railroad/PB&W Railroad is eligible for listing in the NRHP under Criteria A and C. The period of significance is 1872 (when this alignment of the B&P Railroad first opened) to 1976 (last year the PB&W Railroad operated). The boundaries are limited to the railroad right-of-way. Except for the West Baltimore MARC Station and the ancillary buildings at the northeast end of the segment (likely modern buildings, although not confirmed due to limited access), all structures are contributors to this alignment.

Works Consulted

Baltimore, Maryland Quadrangle. USGS Topographic Map: 1890, 1892, 1899, and 1904.

Gunnarsson, Robert L. The Story of the Northern Central Railway: From Baltimore to Lake Ontario. Sykesville, Maryland: Greenberg Publishing Company, Inc., c1991.

Latrobe, Benjamin, Jr. Baltimore, Industrial Gateway on the Chesapeake Bay. Edited by Dennis M. Zembala. Baltimore, Maryland: Baltimore Museum of Industry, c1995.

Wearmouth, John M. Baltimore and Potomac Railroad: The Pope's Creek Branch. Baltimore, Maryland and Washington, D.C.: The Baltimore Chapter and The Washington D.C. Chapter, National Railway Historical Society, Inc., 1986.

Wrabel, Frank A. "Terminals, Tunnels and Turmoil: The History of Pennsylvania Station – Baltimore." The Keystone vol. 28, no. 1 (Spring 1995): 11-62.

Zeoli, Vanessa. "Union Railroad," Maryland Historical Trust Determination of Eligibility Form, 17 November 2010.

MARYLAND HISTORICAL TRUST REVIEW

Eligibility recommended ___ **Eligibility not recommended** ___

Criteria: ___A ___B ___C ___D **Considerations:** ___A ___B ___C ___D ___E ___F ___G

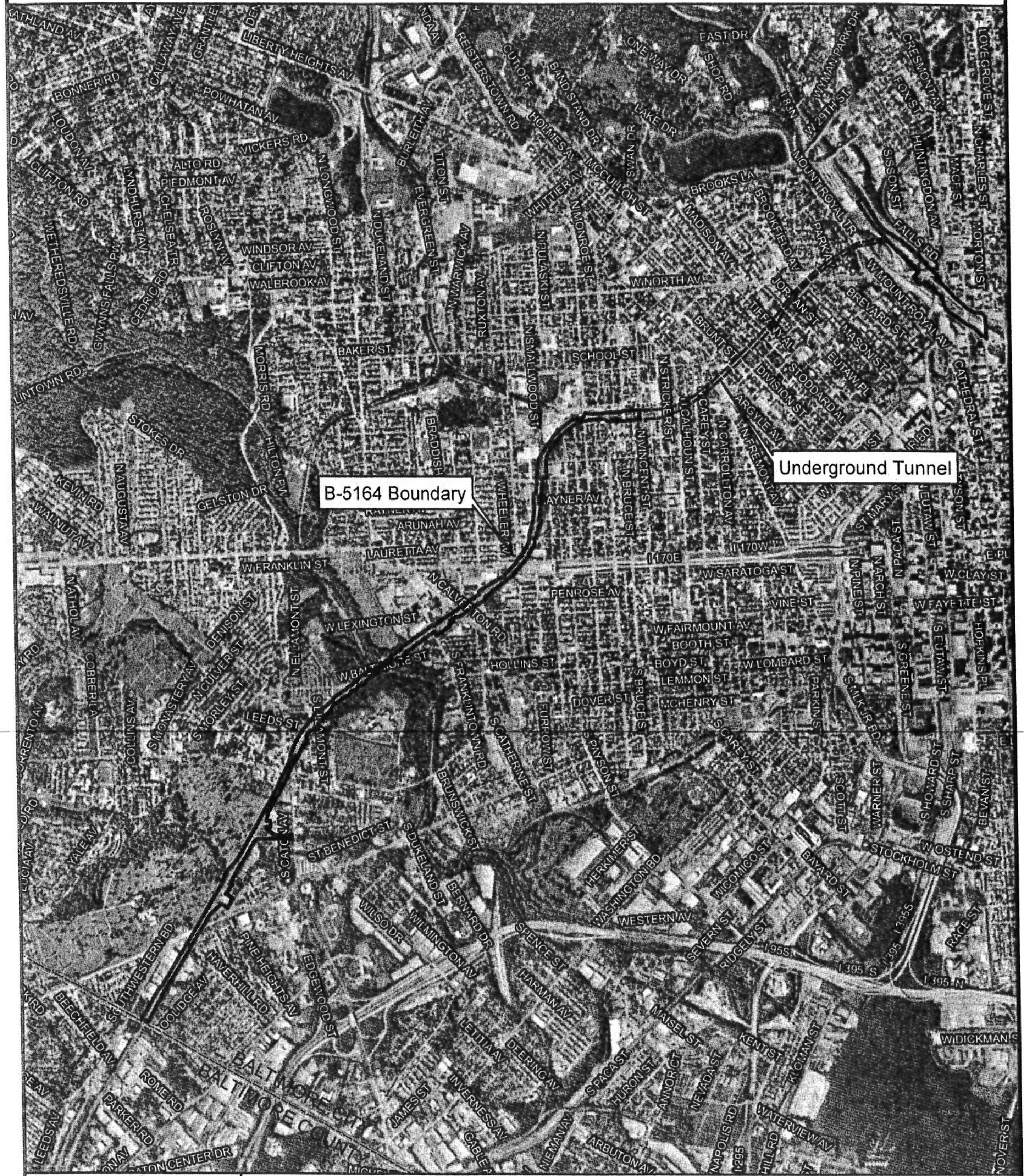
MHT Comments:

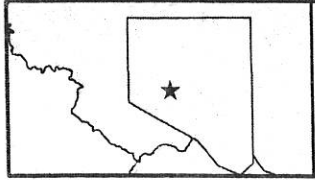
Reviewer, Office of Preservation Services **Date**

Reviewer, National Register Program **Date**

Baltimore & Potomac Railroad/Philadelphia, Baltimore & Washington Railroad (B-5164)

Baltimore, Maryland



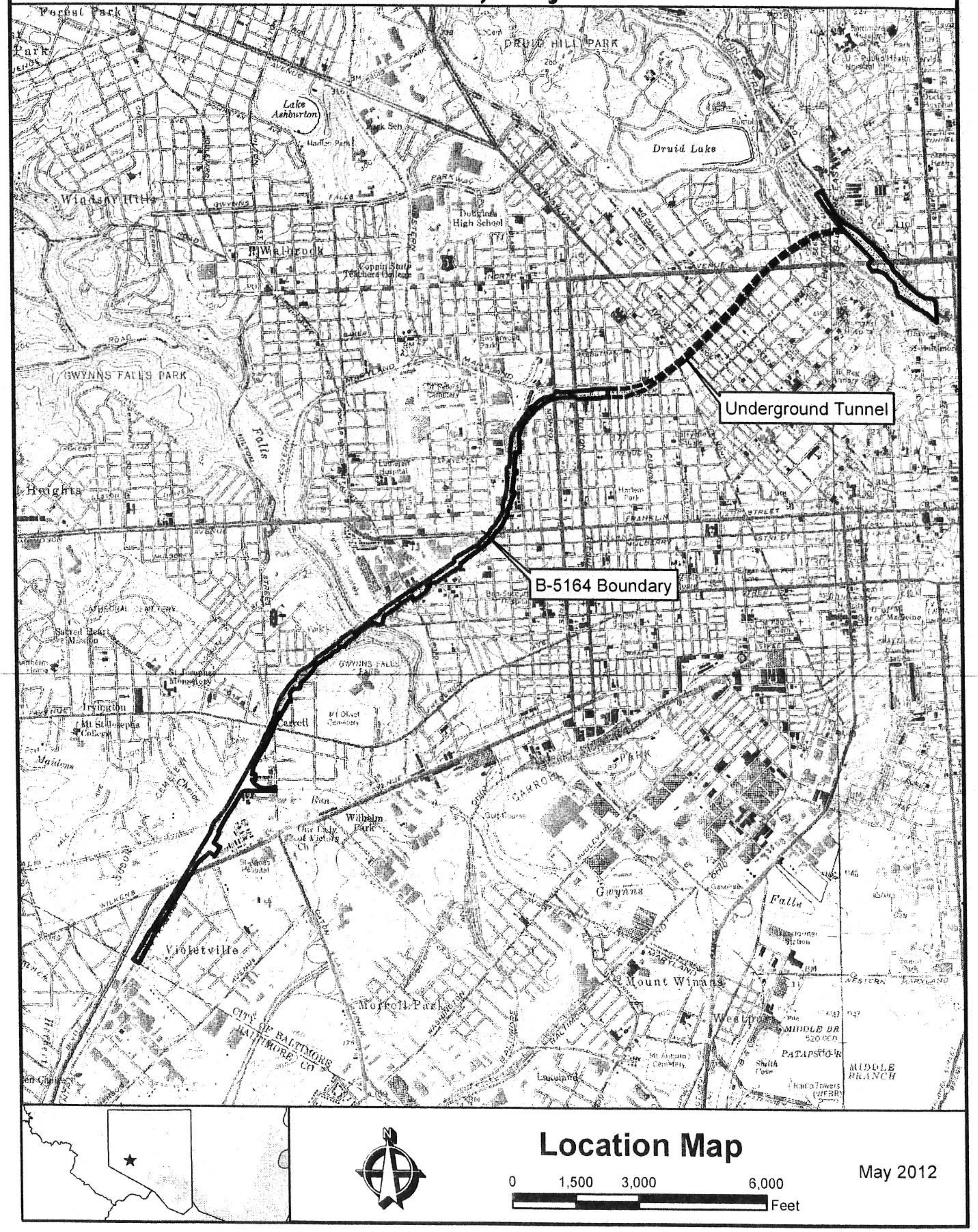


Site Plan

May 2012

Baltimore & Potomac Railroad/Philadelphia, Baltimore & Washington Railroad (B-5164)

Baltimore, Maryland



Source: Baltimore West and East USGS 7.5' DRGs

From: Steve Howard [mailto:pres@boltonhill.org]
Sent: Thursday, April 23, 2015 08:48 AM
To: Fishburne, Michelle (FRA)
Subject: Re: Baltimore and Potomac Tunnel Project

Ms. Fishburne,

I am in receipt of your invitation to participate in the consulting party for the BP Tunnel project. I would like to participate.

Thank you.

Steve Howard
President, Mount Royal Improvement Association

From: Carl Young [mailto:carl.m.young@gmail.com]
Sent: Sunday, April 26, 2015 9:22 PM
To: Fishburne, Michelle (FRA)
Cc: Carl Young; Jason Stover
Subject: Re: Baltimore and Potomac Tunnel Project

Dear Ms. Fishburne -

The Historic Mount Royal Terrace Association [HMRTA] accepts the invitation to participate in the B&P Tunnel project as a consulting party. HMRTA is the neighborhood association that represents homeowners of the Mount Royal Terrace Historic District, which is Site Number B-4251 of the Maryland Inventory of Historic Properties. As such our district meets substantially all of the requirements for listing of historic districts in the National Register of Historic Places.

Please continue to send email correspondence to our Association email address - historicmountroyal@gmail.com

Thank you for contacting us.

Sincerely,
Carl Young
board member, HMRTA
m: 410-456-3415

From: Kim Jumper [mailto:kim.jumper@shawnee-tribe.com]
Sent: Tuesday, April 28, 2015 10:54 AM
To: Fishburne, Michelle (FRA)
Subject: RE: Baltimore and Potomac Tunnel Project

The Shawnee Tribe is interested in consulting on this project.

Kim Jumper
Shawnee Tribe THPO

PRESERVATION
MARYLAND

April 29, 2015

Ms. Michelle Fishburne
Environmental Protection Specialist
Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Baltimore and Potomac Tunnel Project

Dear Ms. Fishburne:

Preservation Maryland is pleased to serve as a Section 106 Consulting Party for the Baltimore and Potomac Tunnel Project in Baltimore, Maryland.

Thank you for the invitation and I look forward to hearing more from you about this project.

Sincerely,

Margaret De Arcangelis

Margaret De Arcangelis
Preservation Services Director

THE SOCIETY FOR THE PRESERVATION OF MARYLAND ANTIQUITIES, INC.
3600 Clipper Mill Road • Suite 248 • Baltimore, Maryland 21211 • 410-685-2886 • FAX 410-539-2182 • *www.PreservationMaryland.org*

From: Holcomb, Eric [mailto:Eric.Holcomb@baltimorecity.gov]
Sent: Wednesday, April 29, 2015 12:50 PM
To: Fishburne, Michelle (FRA)
Subject: Section 106 Consulting Party Invitation Baltimore and Potomac Tunnel Project

Dear Ms. Fishburne

Please include the Commission for Historical and Architectural Preservation as a consulting party on this project.

Thank you,

Eric Holcomb

Executive Director

Commission For Historical And Architectural Preservation Division

Baltimore City Department of Planning

8th Floor, 417 E Fayette St

Baltimore MD 21202-3416

t 443-984-2728 f 410-396-5662

e-mail: eholcomb@baltimorecity.gov

MISSION

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For more information, contact our website at www.baltimorecity.gov/government/planning/index.html

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From: Johns Hopkins [mailto:hopkins@baltimoreheritage.org]
Sent: Thursday, April 30, 2015 9:48 AM
To: Fishburne, Michelle (FRA)
Cc: Cole, Beth
Subject: B&P Tunnel Section 106 Consulting Party

Ms. Fishburne - Thank you for your letter inviting us to be a Section 106 consulting party on the Baltimore and Potomac Railroad Tunnel project. We indeed would like to do so and look forward to the first meeting whenever that is scheduled.

Thank you again and we look forward to participating. Johns

Johns Hopkins, Executive Director
Baltimore Heritage
11 ½ West Chase Street, Baltimore, MD 21201
office 410.332.9992

From: Ngongang, Theo [mailto:Theo.Ngongang@baltimorecity.gov]
Sent: Thursday, April 30, 2015 2:32 PM
To: Fishburne, Michelle (FRA)
Cc: Stosur, Tom
Subject: Baltimore and Potomac Tunnel Project

Dear Michelle,

On behalf of Director Tom Stosur, I'm writing you in response to your email/letter to him dated April 23rd.

I'll be the point of contact for the Planning Department, so please add me to your list.

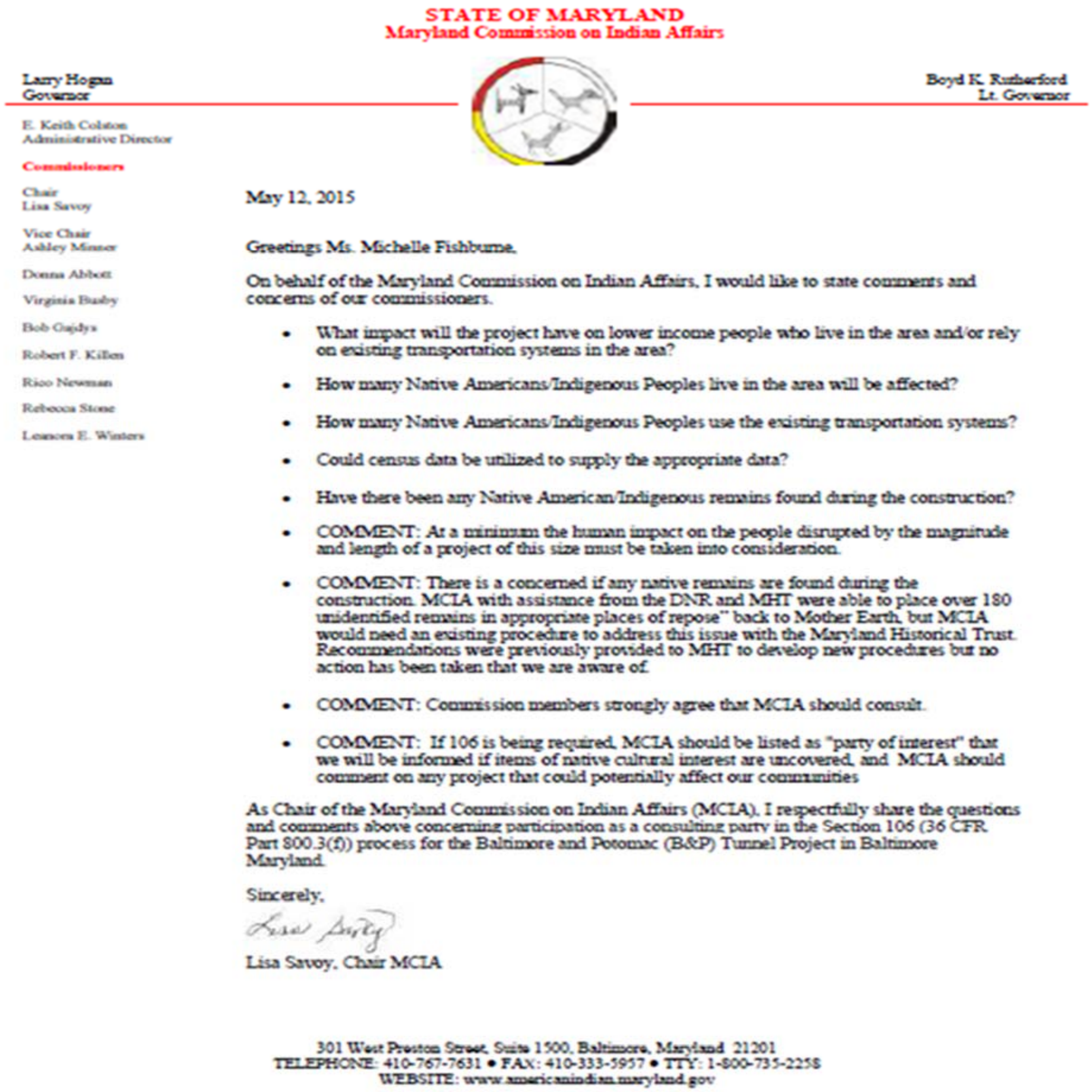
I look forward to participating in the consultation.

Thank you,

T

N. Theo Ngongang | Assistant Director | ***Baltimore City Department of Planning***
417 E. Fayette St. 8th Floor Baltimore, MD 21218 | **Direct: 410.396.8337**

From: Agnes M. Smith -GOCI- [mailto:agnes.smith@maryland.gov]
Sent: Tuesday, May 12, 2015 12:15 PM
To: Fishburne, Michelle (FRA)
Cc: Lisa Savoy; Keith Colston -GOCI-
Subject: Section 106 Consulting Party Invitation



STATE OF MARYLAND
Maryland Commission on Indian Affairs

Larry Hogan
Governor

Boyd K. Rutherford
Lt. Governor

E. Keith Colston
Administrative Director

Commissioners

Chair
Lisa Savoy

Vice Chair
Ashley Minner

Donna Abbott

Virginia Busby

Bob Gajdys

Robert F. Killen

Rico Newman

Rebecca Stone

Leanora E. Winters

May 12, 2015

Greetings Ms. Michelle Fishburne,

On behalf of the Maryland Commission on Indian Affairs, I would like to state comments and concerns of our commissioners.

- What impact will the project have on lower income people who live in the area and/or rely on existing transportation systems in the area?
- How many Native Americans/Indigenous Peoples live in the area will be affected?
- How many Native Americans/Indigenous Peoples use the existing transportation systems?
- Could census data be utilized to supply the appropriate data?
- Have there been any Native American/Indigenous remains found during the construction?
- COMMENT: At a minimum the human impact on the people disrupted by the magnitude and length of a project of this size must be taken into consideration.
- COMMENT: There is a concerned if any native remains are found during the construction. MCIA with assistance from the DNR and MHT were able to place over 180 unidentified remains in appropriate places of repose" back to Mother Earth, but MCIA would need an existing procedure to address this issue with the Maryland Historical Trust. Recommendations were previously provided to MHT to develop new procedures but no action has been taken that we are aware of.
- COMMENT: Commission members strongly agree that MCIA should consult.
- COMMENT: If 106 is being required, MCIA should be listed as "party of interest" that we will be informed if items of native cultural interest are uncovered, and MCIA should comment on any project that could potentially affect our communities

As Chair of the Maryland Commission on Indian Affairs (MCIA), I respectfully share the questions and comments above concerning participation as a consulting party in the Section 106 (36 CFR Part 800.3(f)) process for the Baltimore and Potomac (B&P) Tunnel Project in Baltimore Maryland.

Sincerely,

Lisa Savoy

Lisa Savoy, Chair MCIA

301 West Preston Street, Suite 1500, Baltimore, Maryland 21201
TELEPHONE: 410-767-7631 • FAX: 410-333-5957 • TTY: 1-800-735-2258
WEBSITE: www.americanindian.maryland.gov

--
Agnes M. Smith
Project Coordinator, Governor's Ethnic Commissions
Governor's Office of Community Initiatives
301 W. Preston Street, Suite 1500
Baltimore MD 21201
410-767-7491 (Office)
410-333-5957 (Fax)
Agnes.Smith@maryland.gov

Delaware Tribe Historic Preservation Representatives
Department of Anthropology
Gladfelter Hall
Temple University
1115 W. Polett Walk
Philadelphia, PA 19122
temple@delawaretribe.org

June 14, 2015

US Department of Transportation
Federal Railroad Administration
Attn: Michelle Fishburne
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Baltimore and Potomac Tunnel Project in Baltimore, Maryland

Dear Michelle Fishburne,

Thank you for informing the Delaware Tribe regarding the above referenced project. The Delaware Tribe is committed to protecting historic sites important to our tribal heritage, culture and religion.

We are interested in learning more about the above project and look forward to receiving the results of the engineering and environmental studies. We would also like to continue as a consulting party on this project. We appreciate your cooperation and look forward to working together on our shared interests in preserving Delaware cultural heritage.

If you have any questions, feel free to contact this office by phone at (609) 220-1047 or by e-mail at temple@delawaretribe.org.

Sincerely,

Blair Fink

Blair Fink
Delaware Tribe Historic Preservation Representatives
Department of Anthropology
Gladfelter Hall
Temple University
1115 W. Polett Walk
Philadelphia, PA 19122

From: Jason Vaughan [mailto:jvaughan@baltimoreheritagearea.org]
Sent: Thursday, June 18, 2015 12:50 PM
To: Christeen Taniguchi
Subject: RE: Baltimore and Potomac Tunnel Project: Invitation and Upcoming Consulting Parties Meeting

Hi Christeen,

Thank you for the invitation. The heritage area is honored to be involved in the process. I have added the 7/16 meeting to my schedule.

Sincerely,

Jason

==========================
Jason Vaughan, MHP
Director, Historic Preservation and Interpretation
Baltimore Heritage Area Association, Inc.
100 Light Street, 12th Floor
Baltimore, MD 21202
Office: 410-878-6411 Ext 3 | Cell: 202-320-0283
Visit us online at www.explorebaltimore.org | www.facebook.com/baltimoreheritagearea

MDP

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

David R. Craig, Secretary
Wendi W. Peters, Deputy Secretary

Maryland Department of Planning
Maryland Historical Trust

September 8, 2015

Ms. Michelle Fishburne
Environmental Protection Specialist
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Baltimore and Potomac (B&P) Tunnel Project
Section 106 Review of Historic Architectural and Archeological Technical Reports
Baltimore City, Maryland

Dear Ms. Fishburne,

Thank you for providing the Maryland Historical Trust (Trust) with copies of the Federal Railroad Administration's (FRA) technical reports for historic architectural resources and archeology. The reports present a delineation of the historic architectural area of potential effects (APE), identification of historic properties and historic district contributing elements, determinations of eligibility for the National Register of Historic Places, and archeological potential. The Trust has reviewed the materials as part of our ongoing consultation for this undertaking, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended. We offer the following comments and recommendations.

Archeology: Thank you for providing us with a copy of the following draft report, for review and comment: *B&P Tunnel Project, Baltimore, Maryland – Phase IA Archeological Study* (July 2015). The draft presents useful information regarding the project itself, the area's environmental setting and cultural history, previous investigations in the project vicinity, and an assessment of the archeological potential of the study area. We agree that portions of the study area have a high potential for containing National Register eligible archeological resources that have not yet been identified, particularly resources reflecting its varied uses during the historic period. Given the area's urban setting and constraints, we agree with the report's conclusions that Phase I archeological field investigations should be deferred until selection of a Locally Preferred Alternative. We await further consultation as project planning proceeds to determine an appropriate level of effort to identify and evaluate archeological resources that may be impacted by the undertaking.

We ask that you please incorporate the following changes in the final document:

1. The report must contain a title page that clearly identifies the name and mailing address of the author(s) and project sponsor.
2. The report should add a brief section that succinctly states the professional qualifications of the author(s).

Historic Built Environment: Trust staff reviewed the *Architectural Historic Properties Survey* (July 2015) and Determination of Eligibility (DOE) Forms prepared by Dovetail Cultural Resources Group and RK&K. Prior investigations of the project area have generated considerable information regarding historic resources. This current study identified and documented six (6) additional historic architectural resources. The study also identified contributing elements located within the project's APE for the nine (9) historic districts along the project's alignment. Our comments regarding the eligibility of historic properties for listing in the National Register of Historic Places are provided below.

The following properties are **eligible** for listing in the National Register of Historic Places:

1. B&O Railroad Baltimore Belt Line (MIHP No. B-5287);
2. B&O Baltimore Belt Bridge over Jones Falls Valley (MIHP No. B-5288).

The following properties are **not eligible** for listing in the National Register of Historic Places:

1. Baltimore Car Wheel Works, 2001 Winchester Street (MIHP No. B-5291);
2. Baltimore DOT North Avenue Maintenance Yard, 560 W. North Avenue;
3. Baltimore Clay Products Company, 2113 W. Lafayette Avenue;
4. B. Green & Co. Grocery Warehouse, 2200 Winchester Street.

As noted above, there are nine (9) historic districts that are eligible or listed in the National Register of Historic Places within the project's APE. The quality and depth of existing information available for each historic district varies. The existing documentation often does not identify contributing and non-contributing resources within each district. In an effort to refine our knowledge of the historic districts, FRA has undertaken the identification of resources within the project's APE that contribute to the significance of the historic districts.

The Trust has conducted a cursory review of the contributing resources lists. We believe that the majority of buildings within the historic districts contribute to the significance of the districts. They are integral parts of the urban streetscape and are recognizable as historic buildings. Even if the buildings have been altered over time and possess modest amounts of integrity, they sufficiently convey their historic associations within the district's period of significance. We expect that the contributing resources lists include all properties that date to the district's period of significance that have not been radically altered.

We look forward to ongoing consultation with MTA and other involved parties to successfully complete the Section106 review of the Baltimore & Potomac Tunnel project as planning progresses. If you have questions or require any assistance, please contact Tim Tamburrino (for the historic built environment) at tim.tamburrino@maryland.gov \ 410-514-7637 or Beth Cole (for archeology) at beth.cole@maryland.gov \ 410-514-7631. Thank you for providing us this opportunity to comment.

Sincerely,

Elizabeth Hughes
Acting Director/State Historic Preservation Officer

TJT / 201503793
cc: Laura Schick (FRA)
Jacqueline Thorne (MDOT)
Jean-Wolfers-Lawrence (MTA)
Erik Almquist (RK&K)
Johns Hopkins (Baltimore Heritage)
Jason Vaughan (Baltimore National Heritage Area)
Margaret De Arcangelis (Preservation Maryland)
Lauren Schiszik (CHAP)
Kyle Leggs (Baltimore City Department of Planning)
Steve Howard (Mount Royal Improvement Association) – via email

MDP

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

David R. Craig, Secretary
Wendi W. Peters, Deputy Secretary

Maryland Department of Planning
Maryland Historical Trust

September 24, 2015

Ms. Michelle Fishburne
Environmental Protection Specialist
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Baltimore and Potomac (B&P) Tunnel Project
Section 106 Review of Historic Architectural and Archeological Technical Reports
Baltimore City, Maryland

Dear Ms. Fishburne,

Thank you for providing the Maryland Historical Trust (Trust) with Federal Railroad Administration's (FRA) addendum to the previous technical report for historic architectural resources. The Trust has reviewed the materials as part of our ongoing consultation for this undertaking, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

Historic Built Environment: Trust staff reviewed twelve (12) new DOE forms prepared as an addendum to the *Architectural Historic Properties Survey* (July 2015). Our comments regarding the eligibility of these historic properties for listing in the National Register of Historic Places (National Register) are provided below.

1. Ward Baking Company (MIHP No. B-5112-2): It is the Trust's opinion that this property is **individually eligible** for listing in the National Register under Criterion A. The property also contributes to the Midtown Edmondson Historic District;
2. Baltimore & Potomac Railroad, Edmondson Avenue Station (MIHP No. B-5112-3): We agree that this property is **not individually eligible** for listing in the National Register but it does contribute to the Midtown Edmondson Historic District;
3. Fire Department Engine House No. 36 (MIHP No. B-5112-4): We agree that this property is **individually eligible** for listing in the National Register and contributes to the Midtown Edmondson Historic District;
4. Sinclair Filling Station (MIHP No. B-5118-1): We agree that this property is **not individually eligible** for listing in the National Register but it does contribute to the Midtown Edmondson Historic District;
5. Atlas Safe Deposit & Storage Company Warehouse Complex (MIHP No. B-5118-2): It is the Trust's opinion that this property is **individually eligible** for listing in the National Register under Criterion A and C. The property also contributes to the Midtown Edmondson Historic District;
6. Continental Oil Company Gas Station (MIHP No. B-5118-3): We agree that this property is **not individually eligible** for listing in the National Register but it does contribute to the Midtown Edmondson Historic District;
7. West End Motors, Inc. (MIHP No. B-5118-4): We agree that this property is **not individually eligible** for listing in the National Register but it does contribute to the Midtown Edmondson Historic District;
8. Baltimore & Potomac Railroad, West Mulberry Street Bridge (MIHP No. B-5164-1): We agree that this property is **not individually eligible** for listing in the National Register but it does contribute to the Baltimore & Potomac Railroad;
9. Western Maryland Railroad, Owings Mills Division (MIHP No. B-5293): We agree that this property is **eligible** for listing in the National Register under Criteria A and C;

10. Carver Vocational-Technical High School (MIHP No. B-5294): We agree that this property is **eligible** for listing in the National Register under Criteria A and C;
11. Mount Royal Reservoir Pipe Vault (MIHP No. B-5295): We agree that this property is **not eligible** for listing in the National Register;
12. Warehouse at 2020 Mosher Street (MIHP No. B-5296): We agree that this property is **not eligible** for listing in the National Register;

We look forward to ongoing consultation with MTA and other involved parties to successfully complete the Section106 review of the Baltimore & Potomac Tunnel project as planning progresses. If you have questions or require any assistance, please contact Tim Tamburrino (for the historic built environment) at tim.tamburrino@maryland.gov \ 410-514-7637 or Beth Cole (for archeology) at beth.cole@maryland.gov \ 410-514-7631. Thank you for providing us this opportunity to comment.

Sincerely,

Elizabeth Hughes
Acting Director/State Historic Preservation Officer

TJT / 201504062
cc: Laura Schick (FRA)
Jacqueline Thorne (MDOT)
Jean-Wolfers-Lawrence (MTA)
Erik Almquist (RK&K)
Johns Hopkins (Baltimore Heritage)
Jason Vaughan (Baltimore National Heritage Area)
Margaret De Arcangelis (Preservation Maryland)
Lauren Schiszik (CHAP)
Kyle Leggs (Baltimore City Department of Planning)
Steve Howard (Mount Royal Improvement Association) – via email

MDP

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

David R. Craig, Secretary
Wendi W. Peters, Deputy Secretary

Maryland Department of Planning
Maryland Historical Trust

November 20, 2015

Ms. Michelle Fishburne
Environmental Protection Specialist
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Baltimore and Potomac (B&P) Tunnel Project
Section 106 Architectural Historic Properties Effects Assessment Report
Baltimore City, Maryland

Dear Ms. Fishburne:

Thank you for providing the Maryland Historical Trust (Trust) with Federal Railroad Administration's (FRA) assessment of effects on historic standing structures for the above-referenced undertaking. FRA's submittal represents ongoing consultation to assess the project's effects on historic properties, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and the Maryland Historical Trust Act of 1985, as amended, State Finance and Procurement Article §§ 5A-325 and 5A-326 of the Annotated Code of Maryland. We conducted a thorough review of the materials and we are writing to provide our comments and concurrence.

Assessment of Effects: The FRA's efforts to identify and evaluate historic properties within the Area of Potential Effects for the B&P Tunnel Project resulted in the identification eighteen (18) architectural historic properties that are listed or eligible for listing in the National Register of Historic Places (National Register). The Trust completed a thorough review of the information presented in the *Architectural Historic Properties Effects Assessment Report* (FRA and MDOT 2015) and took into consideration the views of the public and the Section 106 Consulting Parties provided at the various project and consulting parties meetings. Based upon the results of the FRA's studies and consultation, the Trust agrees with the FRA's effects assessments. The three alternative alignments remaining under consideration (Alterative 3, Options A, B and C) will have an **adverse effect** on historic properties. Alternative 3, Option A will adversely affect six historic properties, while Alternative 3, Option B will adversely affect eight historic properties. Alternative 3, Option C will adversely affect ten historic properties. The affected properties are listed below:

Architectural historic properties adversely affected under Alternative 3, Option A include:
Baltimore & Ohio Belt Line Railroad (MIHP No. B-5287)
Baltimore & Ohio Belt Line Bridge over Jones Falls Valley (MIHP No. B-5288)
Baltimore & Potomac Railroad (MIHP No. B-5164)
Reservoir Hill Historic District (MIHP No. B-1379)
Midtown Edmondson Historic District
Lafayette Avenue Bridge over Amtrak (MIHP No. B-4553)

Architectural historic properties adversely affected under Alternative 3, Option B include:
Baltimore & Ohio Belt Line Railroad (MIHP No. B-5287)
Baltimore & Ohio Belt Line Bridge over Jones Falls Valley (MIHP No. B-5288)
Baltimore & Potomac Railroad (MIHP No. B-5164)
Reservoir Hill Historic District (MIHP No. B-1379)

Midtown Edmondson Historic District
Lafayette Avenue Bridge over Amtrak (MIHP No. B-4553)
Atlas Safe Deposit and Storage Company Warehouse Complex (MIHP No. B-5188-2)
Greater Rosemont Historic District (MIHP No. B-5112)

Architectural historic properties adversely affected under Alternative 3, Option C include:
Baltimore & Ohio Belt Line Railroad (MIHP No. B-5287)
Baltimore & Ohio Belt Line Bridge over Jones Falls Valley (MIHP No. B-5288)
Baltimore & Potomac Railroad (MIHP No. B-5164)
Reservoir Hill Historic District (MIHP No. B-1379)
Midtown Edmondson Historic District
Lafayette Avenue Bridge over Amtrak (MIHP No. B-4553)
Greater Rosemont Historic District (MIHP No. B-5112)
Edmondson Avenue Historic District (MIHP No. B-5187)
Ward Baking Company (MIHP No. B-5112-2)
Fire Department Engine House No. 36 (MIHP No. B-5112-4)

Continuing Section 106 Consultation: We commend the FRA's exemplary efforts to engage and seek the views of the public and Consulting Parties throughout the project planning process. This vital feedback, along with comments from resource and regulatory agencies, has assisted in the evaluation of project alternatives and will continue to inform the selection process as the FRA endeavors to balance a multitude of project goals and environmental considerations. All of the currently proposed alternatives impact historic properties by varying degrees. As FRA continues to refine the project plans, it should continue to thoroughly explore modifications to further avoid and reduce impacts to historic properties. This ongoing minimization work may assist FRA in the identification of a preferred alternative.

We look forward to further coordination with FRA and the Section 106 Consulting Parties to successfully complete the Section 106 review process, including the execution of an effective agreement document and the completion of archeological investigations once a preferred alignment has been selected.

If you have questions or need further assistance, please contact Beth Cole at 410-514-7631 / beth.cole@maryland.gov or Tim Tamburrino at 410-514-7637 or tim.tamburrino@maryland.gov. Thank you for providing us this opportunity to comment.

Sincerely,

Elizabeth Hughes
Director / State Historic Preservation Officer
Maryland Historical Trust

EH/TJT/EJC
201504398
Distribution List:
Laura Schick (FRA)
Erik Almquist (RK&K)
Lauren Schiszik (CHAP)
Jason Vaughan (Baltimore National Heritage Area)
Jacqueline Thorne (MDOT)
Christine Taniguchi (RK&K)
Nicholas Redding (Preservation Maryland)
Jean-Wolfers-Lawrence (MTA)
Johns Hopkins (Baltimore Heritage)
Kyle Leggs (Baltimore City Department of Planning)
Steve Howard (Mount Royal Improvement Association) – via email

Preserving America's Heritage

June 7, 2016

Ms. Laura A. Shick
Environmental Protection Specialist
Federal Railroad Administration
Office of Railroad Policy and Development
1200 New Jersey Avenue, SE
Washington, DC 20590

Ref: *Proposed Baltimore and Potomac Tunnel Project*
Baltimore City, Maryland

Dear Ms. Shick:

The Advisory Council on Historic Preservation (ACHP) has received your notification and supporting documentation regarding the adverse effects of the referenced undertaking on a property or properties listed or eligible for listing in the National Register of Historic Places. Based upon the information provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and it is determined that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the Maryland State Historic Preservation Office (SHPO), and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA, and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with the notification of adverse effect. If you have any questions or require further assistance, please contact Christopher Wilson at 202-517-0229 or via e-mail at cwilson@achp.gov.

Sincerely,

LaShavio Johnson

LaShavio Johnson
Historic Preservation Technician
Office of Federal Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION

401 F Street NW, Suite 308 • Washington, DC 20001-2637
Phone: 202-517-0200 • Fax: 202-517-6381 • achp@achp.gov • www.achp.gov

Delaware Tribe Historic Preservation Representatives
P.O. Box 64
Pocono Lake, PA 18347
temple@delawaretribe.org

August 1, 2016

US Dept. of Transportation
Federal Railroad Administration
1200 New Jersey Ave., SE
Washington, DC 20590

RE: Section 106 Update and Section 4(f) De Minimis Notification B & P Tunnel Project

Dear Mr. Bratcher,

Thank you for updating the Delaware Tribe of the above proposed project. We concur with the "no adverse effect" findings presented in this update. We would like to continue as consultants on this project.

We ask that in the event that a concentration of artifacts and/or in the unlikely event any human remains are accidentally unearthed during the course of the project that all work is halted until the Delaware Tribe of Indians is informed of the inadvertent discovery and a qualified archaeologist can evaluate the find.

If you have any questions, feel free to contact this office by phone at (610) 761-7452 or by e-mail at temple@delawaretribe.org.

Sincerely,

Susan Bachor
Delaware Tribe Historic Preservation Representative

Christeen Taniguchi

From:	Johns Hopkins <hopkins@baltimoreheritage.org>
Sent:	Thursday, August 4, 2016 2:00 PM
To:	Christeen Taniguchi
Cc:	Beth Cole -MDP-; Laura.Shick@dot.gov; Tim Tamburrino; Eric Almquist; Amanda Apple -MDP-; brandon.bratcher@dot.gov
Subject:	RE: B&P Tunnel Sec. 106

Thanks chrisreen. This helps. Johns

On Aug 4, 2016 12:01 PM, "Christeen Taniguchi" <ctaniguchi@rkk.com> wrote:

> Hi Johns,
>
> The two rowhouses would be demolished to maintain connectivity between North Bentalou Street and the adjoining alleyway located south of the Lauretta Avenue rowhouses.
>
> Your insightful comments have been invaluable to this project's Section 106 process, so thank you! Let us know of any other questions or comments.
>
> Christeen
>
> **From:** Johns Hopkins [mailto:hopkins@baltimoreheritage.org]
> **Sent:** Wednesday, August 3, 2016 4:29 PM
> **To:** Christeen Taniguchi <ctaniguchi@rkk.com>
> **Cc:** brandon.bratcher@dot.gov; Amanda Apple -MDP- <amanda.apple@maryland.gov>; Tim Tamburrino <tim.tamburrino@maryland.gov>; beth cole <beth.cole@maryland.gov>; Laura.Shick@dot.gov; Eric Almquist <ealmquist@rkk.com>
> **Subject:** Re: B&P Tunnel Sec. 106
>
> Thanks Christeen. I'll stop harking on the corner of North and Eutaw...it's clear you get the message.
>
> As for the two additional rowhouse to be demolished, these are not exceptionally great pieces of architecture, but are nice historic rowhouses that are part of an otherwise continuous block without any gaps. It would be helpful to hear (or see) what is going in there that requires their demolition and how it would impact the

remaining houses in the row. On one end of the spectrum, I'm envisioning the street needs widening and that's it. On the other end, I'm envisioning a massive vent plant directly adjacent to the remaining houses. Any help trying to visualize what's going on? Thanks again. Johns

----
Johns Hopkins, Executive Director
Baltimore Heritage
11 ½ West Chase Street, Baltimore, MD 21201
office 410.332.9992

On Wed, Aug 3, 2016 at 4:13 PM, Christeen Taniguchi <ctaniguchi@rkk.com> wrote:

> Hi Johns,
>
> On behalf of FRA, thank you for your input on the recent B&P Tunnel project Section 106 Update submittal. Please see below for FRA's responses:
>
> 1) Vent Plant – We understand Baltimore Heritage's continued concern about a possible intermediate ventilation plant at the corner of Eutaw Place and North Avenue. Please be assured that FRA and the B&P Tunnel project team are fully committed to incorporating input from the Section 106 consulting parties and public as we design the vent plant. We are working to make the structure as unobtrusive as possible and blend it into the neighborhood through the use of architectural and landscaping treatments. We are also considering the feasibility of adding shallow store fronts and intend to work with interested stakeholders to ensure compatibility with potential future development plans.
>
> 2) South Portal Area – The two additional rowhouses to be demolished are located at the southwest corner of Lauretta Avenue and N. Bentalou Street. Their addresses are: 2301 Lauretta Avenue and 2303 Lauretta Avenue.
>
> As you know, the FEIS is scheduled to be released in October 2016. If you'd like, we can add you to the list of interested parties we'll be reaching out to when that document is released to the public.
>
> Let us know of any other questions or comments you may have, and thank you for continuing to play an active and valuable role as a consulting party.

Christeen

From: Johns Hopkins [mailto:hopkins@baltimoreheritage.org]
Sent: Monday, August 1, 2016 11:32 AM
To: brandon.bratcher@dot.gov; Christeen Taniguchi <ctaniguchi@rkk.com>; Amanda Apple -MDP- <amanda.apple@maryland.gov>
Subject: B&P Tunnel Sec. 106

Christeen -- Thank you for sending over the revised Sec. 106 report on the B&P tunnel. I have one comment and one question:

1) Vent Plant -- Thank you for eliminating the Whitelock Street garden for the north vent plant. We still have concerns about the possible site at the corner of Eutaw Place and North Avenue. This is the major gateway and connector between Bolton Hill and Reservoir Hill, and we believe that this corner warrants a structure that can bring the neighborhoods together -- something the vent plant would not do. Although historically there was a large building at the corner, two important things are different this time around: a) the vent plant would not be a hive of activity as the historic building was, but rather by design a place where people are not allowed; and b) historically what we know today as the Reservoir Hill and Bolton Hill neighborhoods were lumped together and known as Mount Royal. Then the community was more seamless. Today North Avenue has unfortunately become full of barriers between the two "new" neighborhoods, and today residents and planners are looking for ways to break down those barriers, especially along North Avenue. A large people-less vent plant will not contribute to this effort, especially on the vital corner of North and Eutaw.

2) South Portal Area -- From the report, it seems as if the number of demolitions is being reduced. Thank you. But I could not get a good idea of which rowhouses were being added to the demolition list in the Greater Rosemont Historic District and the Edmondson Avenue Historic District. Is it possible to email me the addresses of these places?

Thanks Christeen. Johns

Johns Hopkins, Executive Director
Baltimore Heritage
11 ½ West Chase Street, Baltimore, MD 21201
office 410.332.9992

"RK&K" and "RK&K Engineers" are registered trade names of Rummel, Klepper & Kahl, LLP, a Maryland limited liability partnership. This message contains confidential information intended only for the person or

MARYLAND DEPARTMENT OF
PLANNING
MARYLAND HISTORICAL TRUST

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

Wendi W. Peters, Secretary
Ewing McDowell, Deputy Secretary

October 11, 2016

Mr. Michael Johnsen
Environmental Protection Specialist
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Baltimore and Potomac (B&P) Tunnel Project
Section 106 Update
Baltimore City, Maryland

Dear Mr. Johnsen:

Thank you for providing the Maryland Historical Trust (Trust) with Federal Railroad Administration's (FRA) latest update for the above-referenced undertaking. FRA's submittal represents ongoing consultation to assess the project's effects on historic properties, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and the Maryland Historical Trust Act of 1985, as amended, State Finance and Procurement Article §§ 5A-325 and 5A-326 of the Annotated Code of Maryland. We are writing to provide our comments and concurrence.

Revised Area of Potential Effects (APE): The Trust understands that the project's APE has been amended to reflect ongoing refinements to the preferred alternative (Alternative 3B). We agree that the current APE adequately encompasses the area in which the undertaking may directly or indirectly cause alterations in the character or use of historic properties.

Supplemental Identification and Evaluation: Trust staff has reviewed the Determination of Eligibility (DOE) form prepared for the John Eager Howard School and Recreation Center (MIHP No. B-1379-3) which is located within the APE for the Intermediate Vent Plant. We concur that the school is not eligible for listing in the National Register of Historic Places.

Newly identified historic properties within the revised APE also include the National Register-eligible Union Railroad (MIHP No. B-5163), the National Register-listed Bolton Hill Historic District (MIHP No. B-64) and a commercial building located at 900-908 W. North Avenue that contributes to the significance of the National Register-listed Reservoir Hill Historic District (MIHP No. B-1379).

Due to the selection and refinement of Alternative 3B, we acknowledge that the following resources are no longer located within the undertaking's APE: the David Bachrach House/Gertrude Stein House (MIHP No. B-4098), the Carver Vocational-Technical High School (MIHP No. B-5294) and the Western Maryland Railroad, Owings Mills Division (MIHP. No. B-5293).

Assessment of Effects: The Trust confirms that the overall undertaking continues to have an **adverse effect** on historic properties. The adversely affected properties for Alternative 3B include:

Baltimore & Ohio Belt Line Railroad (MIHP No. B-5287)
Baltimore & Ohio Belt Line Bridge over Jones Falls Valley (MIHP No. B-5288)
Baltimore & Potomac Railroad (MIHP No. B-5164)
Reservoir Hill Historic District (MIHP No. B-1379)
Midtown Edmondson Historic District (MIHP No. TBD)
Lafayette Avenue Bridge over Amtrak (MIHP No. B-4553)
Atlas Safe Deposit and Storage Company Warehouse Complex (MIHP No. B-5188-2)
Greater Rosemont Historic District (MIHP No. B-5112)
Edmondson Avenue Historic District (MIHP No. 5187)

Section 4(f) de minimis Impact Determination: The Trust agrees that the undertaking will have no adverse effect on the Union Railroad (MIHP No. B-5163), Ward Baking Company (MIHP No. B-5112-2) and Fire Department Engine House No. 36 (MIHP No. B-5112-4). For Section 4(f) purposes, we acknowledge that the FRA intends to seek a *de minimis* impact determination pursuant to 23 CFR 774 for these properties.

Continuing Section 106 Consultation: We look forward to further coordination with FRA and the consulting parties to successfully complete the Section 106 review process and execute an effective agreement document to mitigate the undertaking's adverse effects.

If you have questions or need further assistance, please contact Beth Cole at 410-514-7631 / beth.cole@maryland.gov or Tim Tamburrino at 410-514-7637 or tim.tamburrino@maryland.gov. Thank you for providing us this opportunity to comment.

Sincerely,

Elizabeth Hughes

Elizabeth Hughes
Director / State Historic Preservation Officer
Maryland Historical Trust

EH/TJT/EJC
201504398
Distribution List:
Laura Schick (FRA)
Brandon Bratcher (FRA)
Jacqueline Thorne (MDOT)
Jean-Wolfers-Lawrence (MTA)
Erik Almquist (RK&K)
Christine Taniguchi (RK&K)
Johns Hopkins (Baltimore Heritage)
Lauren Schiszik (CHAP)
Nicholas Redding (Preservation Maryland)
Margaret De Arcangelis (Preservation Maryland)
Kyle Leggs (Baltimore City Department of Planning)
Odessa L. Phillip (Baltimore City DOT)
Jason Vaughan (Baltimore National Heritage Area)
Steve Howard (Mount Royal Improvement Association) – via email

Correspondence Related to Natural Resources

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 ADMIRAL COCHRANE DRIVE
ANNAPOLIS, MD 21401
PHONE: (410)573-4599 FAX: (410)266-9127

Consultation Tracking Number: 05E2CB00-2015-SLI-0326 December 09, 2014
Project Name: Baltimore and Potomac Tunnel

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project.

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

Preliminary

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

Preliminary

United States Department of Interior
Fish and Wildlife Service

Project name: Baltimore and Potomac Tunnel

Preliminary Species list

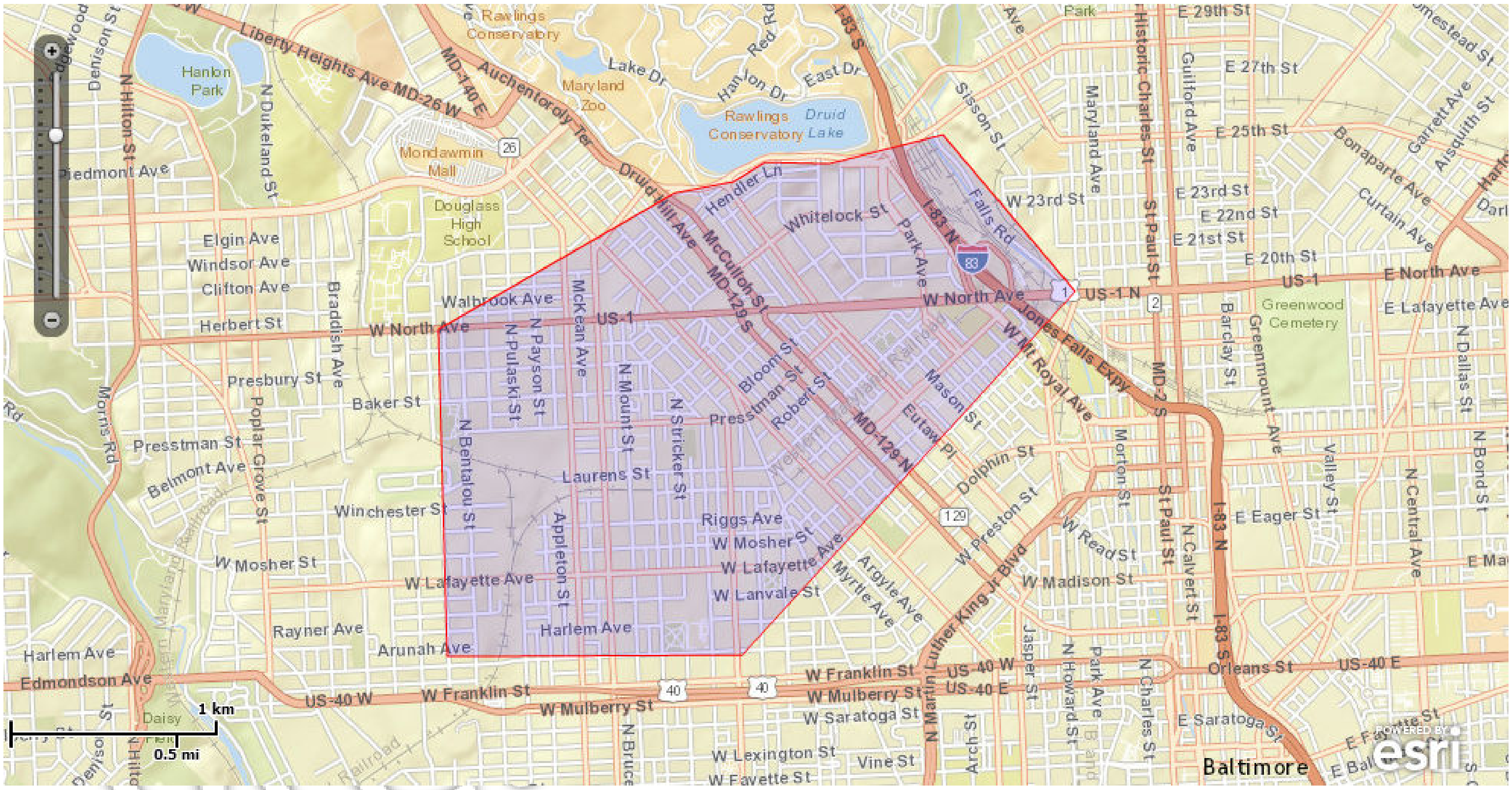
Provided by:

Chesapeake Bay Ecological Services Field Office
177 ADMIRAL COCHRANE DRIVE
ANNAPOLIS, MD 21401
(410) 573-4599

Consultation Tracking Number: 05E2CB00-2015-SLI-0326
Project Type: Transportation
Project Description: The proposed project involves replacing an existing 1.4 mile underground tunnel along one of three potential alignments in Baltimore City (see attached mapping). The project is in the planning phase and it remains to be determined whether the final tunnel design will extend beneath the Jones Falls or the track alignment will remain on the existing bridge structure above the stream before entering the B&P Tunnel.

Preliminary

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-76.6268744 39.3179166, -76.6194114 39.3110768, -76.638204 39.2952033, -76.6548552 39.2951369, -76.6553744 39.3094166, -76.6419891 39.3153933, -76.6387276 39.3158581, -76.6369251 39.3167213, -76.6333202 39.3166549, -76.6268744 39.3179166)))

Project Counties: Baltimore (city), MD

United States Department of Interior
Fish and Wildlife Service

Project name: Baltimore and Potomac Tunnel

Endangered Species Act Species List

There are a total of 0 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

There are no listed species identified for the vicinity of your project.

Preliminary

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Preliminary

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Larry Hogan, *Governor*
Boyd K. Rutherford, *Lt. Governor*
Mark J. Belton, *Secretary*
Frank W. Dawson, III, *Deputy Secretary*

June 11, 2015

Angela Willis
Maryland Transit Administration
6 St. Paul St.
Baltimore, MD 21202-1614

RE: Environmental Review for Baltimore and Potomac Tunnel Project, Baltimore City, MD.

Dear Ms. Willis:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2015.0251.bc

Tawes State Office Building – 580 Taylor Avenue – Annapolis, Maryland 21401
410-260-8DNR or toll free in Maryland 877-620-8DNR – *dnr.maryland.gov* – TTY Users Call via the Maryland Relay

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Larry Hogan, *Governor*
Boyd K. Rutherford, *Lt. Governor*
Mark J. Belton, *Secretary*
Mark L. Hoffman, *Acting Deputy Secretary*

15-MIS-201

June 29, 2015

Angela Willis
Maryland Transit Administration
6 St. Paul Street
Baltimore, MD 21202

Subject: Fisheries Information for the Proposed Baltimore and Potomac Tunnel Project, in Baltimore, Maryland.

Dear Ms. Willis,

The above referenced project has been reviewed to determine fisheries species in the vicinity of the proposed project. The proposed activities include the Baltimore and Potomac Tunnel Project, in Baltimore, Maryland.

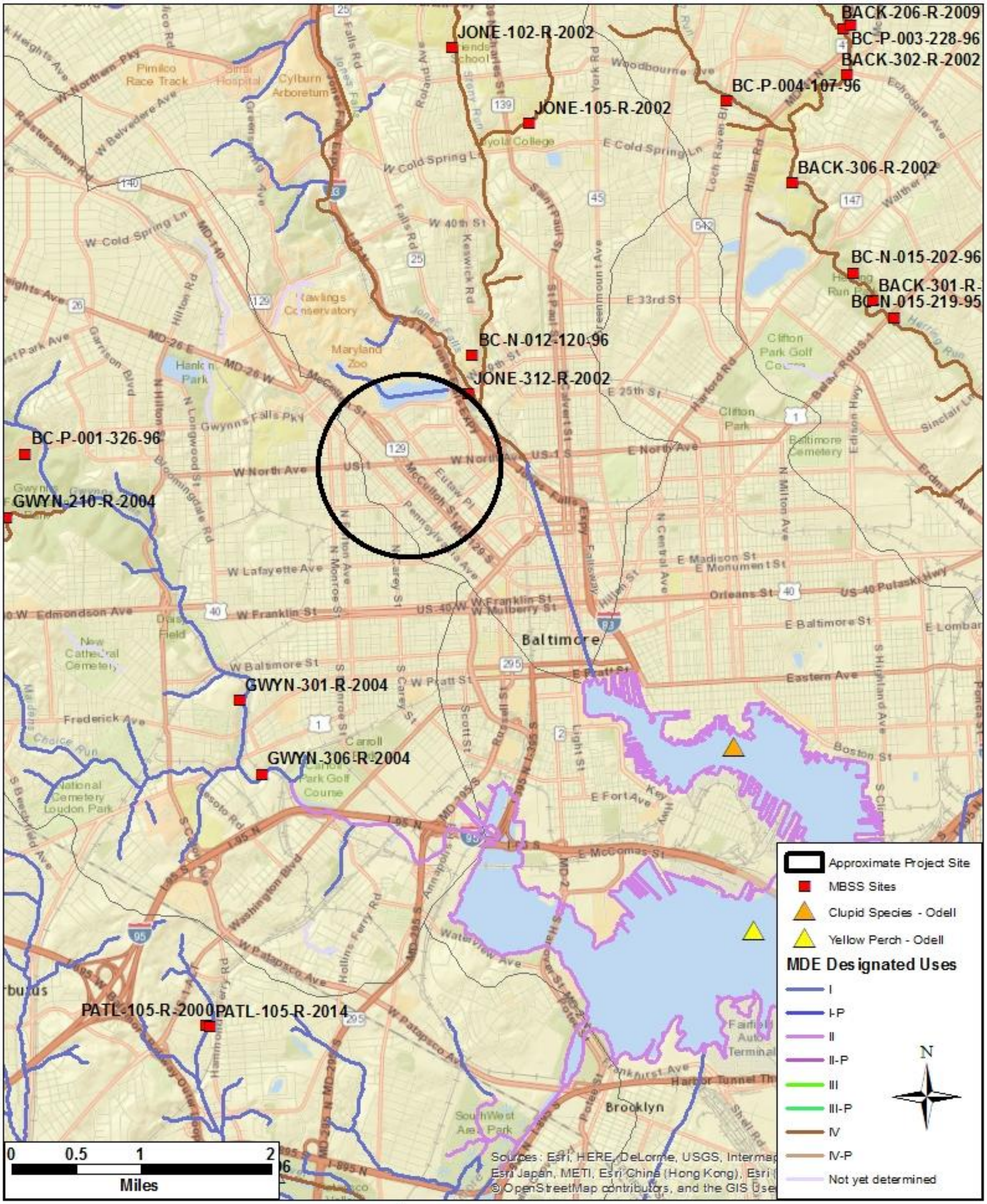
Jones Falls, Stony Run (Patapsco River Basin) and tributaries near the site are classified as Use IV streams (Recreational Trout Waters). Generally, no instream work is permitted in Use IV streams during the period of March 1 through May 31, inclusive, during any year.

No anadromous fish have been documented near the project site. However, these streams may support many resident fish species documented by our Maryland Biological Stream Survey. There are Maryland Biological Stream Survey (MBSS) stations near the project location. The species collected at one of these stations has been itemized in the attached list. MBSS data can be accessed via the MDDNR web page at http://streamhealth.maryland.gov, allowing access to resource surveys in neighboring tributaries.

If you have further questions, please contact the Environmental Review Program at 410-260-8803.

Sincerely,

Alison Armocida
Environmental Review Program



MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

The following fishes were collected at JONE-312-R-2002

Common name	Percent of total
LONGNOSE DACE	30.0
WHITE SUCKER	22.1
SATINFIN SHINER	19.4
TESSELLATED DARTER	10.2
BLUNTNOSE MINNOW	7.0
YELLOW BULLHEAD	4.2
REDBREAST SUNFISH	2.3
MUMMICHOG	1.5
SWALLOWTAIL SHINER	1.4
AMERICAN EEL	1.0
LARGEMOUTH BASS	0.5
NORTHERN HOGSUCKER	0.3

United States Department of the Interior
U.S. Fish & Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410/573 4575

Online Certification Letter

Today's date: 9/17/15

Project: Baltimore and Potomac Tunnel

Dear Applicant for online certification:

Thank you for using the U.S. Fish and Wildlife Service (Service) Chesapeake Bay Field Office online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the referenced project in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA).This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

Based on this information and in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), we certify that except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project area. Therefore, no Biological Assessment or further section 7 consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For additional information on threatened or endangered species in Maryland, you should contact the Maryland Wildlife and Heritage Division at (410) 260-8573. For information in Delaware you should contact the Delaware Division of Fish and Wildlife, Wildlife Species Conservation and Research Program at (302) 735-8658. For information in the District of Columbia, you should contact the National Park Service at (202) 339-8309.

The U.S. Fish and Wildlife Service also works with other Federal agencies and states to minimize loss of wetlands, reduce impacts to fish and migratory birds, including bald eagles, and restore habitat for wildlife. Information on these conservation issues and how development projects can avoid affecting these resources can be found on our website (www.fws.gov/chesapeakebay)

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Chesapeake Bay Field Office Threatened and Endangered Species program at (410) 573-4527.

Sincerely,

Genevieve LaRouche
Field Supervisor

Correspondence Related to the Draft Environmental Impact Statement and Section 4(f) Evaluation

United States Department of the Interior

MARCH 3, 1849

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Custom House, Room 244
200 Chestnut Street
Philadelphia, Pennsylvania 19106-2904

IN REPLY REFER TO:

February 2, 2016

9043.1
ER15/0695

Michelle Fishburne
Office of Railroad Policy and Development
USDOT Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Subject: Northeast Corridor Baltimore and Potomac Tunnel Project Draft EIS/Section 4(f)

Dear Ms. Fishburne:

The Department of the Interior (Department) has reviewed the Draft EIS and Section 4(f) Evaluation prepared by the Federal Railroad Administration (FRA) for the Baltimore and Potomac Tunnel Project in Baltimore, MD. We understand from the DEIS that the FRA is considering the no action alternative and three action alternatives; the preferred alternative will be identified in the Final EIS.

The purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, including: to reduce travel time through the B&P Tunnel and along the NEC; to accommodate existing and projected travel demand for intercity and commuter passenger services; to eliminate impediments to existing and projected operations along the NEC; and to provide operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure. We offer the following comments on this project for your consideration.

Section 4(f) Evaluation Comments

The Department appreciates that you have coordinated with various agencies regarding this project and the development of the Section 4(f) Evaluation. We encourage continued coordination with these agencies and tribes throughout the life of this project.

Currently, there is no preferred alternative identified and while the Section 4(f) Evaluation does contain specific analysis about impacts to Section 4(f) resources, the Department of the Interior is currently unable to provide concurrence that there is a no feasible and prudent alternative and that all measures have been taken to minimize harm. We appreciate and encourage continued interagency communication as you move through the process of finalizing the EIS and selecting a preferred alternative.

We note that there has been extensive consultation with the consulting parties and that a Memorandum of Agreement (MOA) will be developed to resolve any adverse effects. We agree that this should be an appropriate measure to minimize harm and to mitigate the adverse effect to the Section 4(f) resources. We would appreciate the opportunity to review the MOA along with the finalized Section 4(f).

We appreciate the opportunity to provide these comments.

Sincerely,

Lindy Nelson
Regional Environmental Officer

cc: Cheryl Sams, NPS

Maryland Department of Planning

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

David R. Craig, Secretary
Wendi W. Peters, Deputy Secretary

February 4, 2016

Ms. Brittany Rolf
Environmental Planner,
RK&K Engineers
81 W. Mosher Street
Baltimore, MD 21217

STATE CLEARINGHOUSE RECOMMENDATION

State Application Identifier: **MD20151222-1081**
Applicant: RK&K Engineers
Project Description: Draft Environmental Impact Statement & Section 4(f) Evaluation Baltimore & Potomac (B&P) Tunnel Project: To Address the Structural and Operational Deficiencies of the existing B&P Tunnel, Improve Passenger Rail Services... (Prior:MD20150515-0391)
Project Location: Baltimore City
Approving Authority: U.S. Department of Transportation DOT/FRA
Recommendation: **Consistent with Qualifying Comment(s)**

Dear Ms. Rolf:

In accordance with Presidential Executive Order 12372 and Code of Maryland Regulation 34.02.02.04-.07, the State Clearinghouse has coordinated the intergovernmental review of the referenced project. This letter constitutes the State process review and recommendation based upon comments received to date. This recommendation is valid for a period of three years from the date of this letter.

Review comments were requested from the Maryland Department(s) of Natural Resources, the Environment; Baltimore Metropolitan Council; and the Maryland Department of Planning, including the Maryland Historical Trust. As of this date, the Maryland Department of Natural Resources and the Baltimore Metropolitan Council have not submitted comments. **This recommendation is contingent upon the applicant considering and addressing any problems or conditions that may be identified by their review. Any comments received will be forwarded.**

Our Department (Planning) found this project to be consistent with our plans, programs, and objectives.

Planning appreciates the opportunity to review the Draft Environmental Impact Statement (DEIS) and Section 4(f) Evaluation for the Baltimore and Potomac (B&P) Project. Planning supports the B&P project; and we believe that improvements of the existing tunnel are necessary to bring the outdated infrastructure to the modern era to accommodate the existing and future passenger travel demand and help rail freight in Maryland and along the northeast corridor while meeting the goals of the U.S. Department of Transportation's North East Corridor Future Study and promoting economic development in Maryland. All the alternatives retained for detailed study are located within a Priority Funding area. We appreciate the project team's public outreach efforts to address community and environmental impacts of various proposed alternatives and the selection of the alternatives retained for detailed study, which in general would have less impact as compared to those dropped for further study, e.g., reduced impacts to the West Baltimore MARC station area revitalization goals. We also appreciate the consideration of minimizing potential community impacts of ventilation plants through design and materials appropriate to the neighborhood context in which they would reside.

The Maryland Department of Environment and the Maryland Historical Trust found this project to be generally consistent with their plans, programs, and objectives, but included certain qualifying comments summarized below.

The Maryland Department of Environment (MDE) stated the following:

1. Any above ground or underground petroleum storage tanks, which may be utilized, must be installed and maintained in accordance with applicable State and federal laws and regulations. Underground storage tanks must be registered and the installation must be conducted and performed by a contractor certified to install underground storage tanks by the Land Management Administration in accordance with COMAR 26.10. Contact the Oil Control Program at (410) 537-3442 for additional information.

2. If the proposed project involves demolition – Any above ground or underground petroleum storage tanks that may be on site must have contents and tanks along with any contamination removed. Please contact the Oil Control Program at (410) 537-3442 for additional information.

3. Any solid waste including construction, demolition and land clearing debris, generated from the subject project, must be properly disposed of at a permitted solid waste acceptance facility, or recycled if possible. Contact the Solid Waste Program at (410) 537-3315 for additional information regarding solid waste activities and contact the Waste Diversion and Utilization Program at (410) 537-3314 for additional information regarding recycling activities.

4. The Waste Diversion and Utilization Program should be contacted directly at (410) 537-3314 by those facilities which generate or propose to generate or handle hazardous wastes to ensure these activities are being conducted in compliance with applicable State and federal laws and regulations. The Program should also be contacted prior to construction activities to ensure that the treatment, storage or disposal of hazardous wastes and low-level radioactive wastes at the facility will be conducted in compliance with applicable State and federal laws and regulations.

5. Any contract specifying "lead paint abatement" must comply with Code of Maryland Regulations (COMAR) 26.16.01 - Accreditation and Training for Lead Paint Abatement Services. If a property was built before 1950 and will be used as rental housing, then compliance with COMAR 26.16.02 - Reduction of Lead Risk in Housing; and Environment Article Title 6, Subtitle 8, is required. Additional guidance regarding projects where lead paint may be encountered can be obtained by contacting the Environmental Lead Division at (410) 537-3825.

6. The proposed project may involve rehabilitation, redevelopment, revitalization, or property acquisition of commercial, industrial property. Accordingly, MDE's Brownfields Site Assessment and Voluntary Cleanup Programs (VCP) may provide valuable assistance to you in this project. These programs involve environmental site assessment in accordance with accepted industry and financial institution standards for property transfer. For specific information about these programs and eligibility, please contact the Land Restoration Program at (410) 537-3437.

7. Construction, renovation and/or demolition of buildings and roadways must be performed in conformance with State regulations pertaining to "Particulate Matter from Materials Handling and Construction" (COMAR 26.11.06.03D), requiring that during any construction and/or demolition work, reasonable precaution must be taken to prevent particulate matter, such as fugitive dust, from becoming airborne.

The Maryland Historical Trust appreciates the opportunity to review the Draft Environmental Impact Statement. Our agency has no comments at this time. The Federal Railroad Administration (FRA) initiated the Section 106 review process in 2014. We look forward to further consultation with FRA to complete the Section 106 process.

Any statement of consideration given to the comments(s) should be submitted to the approving authority, with a copy to the State Clearinghouse. The State Application Identifier Number must be placed on any correspondence pertaining to this project. The State Clearinghouse must be kept informed if the approving authority cannot accommodate the recommendation.

Please remember, you must comply with all applicable state and local laws and regulations. If you need assistance or have questions, contact the State Clearinghouse staff person noted above at 410-767-4490 or through e-mail at myra.barnes@maryland.gov. **Also please complete the attached form and return it to the State Clearinghouse as soon as the status of the project is known.** ***Any substitutions of this form must include the State Application Identifier Number.*** **This will ensure that our files are complete.**

Thank you for your cooperation with the MIRC process.

Sincerely,
Linda C. Janey
Linda C. Janey, J.D., Assistant Secretary

LCJ:MB
Enclosure(s)
cc: Ryan Snyder - RK & K
Greg Golden - DNR
Amanda Degen - MDE
Odessa Phillip - BLCO Transp.
Todd Lang - BMC
Bihui Xu - MDPI-T
Peter Conrad - MDPL
Beth Cole - MHT

15-1081_CRR.CLS.doc

MDP
Maryland Department of Planning

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

David R. Craig, Secretary
Wendi W. Peters, Deputy Secretary

PROJECT STATUS FORM

Please complete this form and return it to the State Clearinghouse upon receipt of notification that the project has been approved or not approved by the approving authority.

TO: **Maryland State Clearinghouse**
Maryland Department of Planning
301 West Preston Street
Room 1104
Baltimore, MD 21201-2305

DATE: ____________________
(Please fill in the date form completed)

FROM: ____________________________
(Name of person completing this form.)

PHONE: _____-____-________
(Area Code & Phone number)

RE: **State Application Identifier:** **MD20151222-1081**
Project Description: Draft Environmental Impact Statement & Section 4(f) Evaluation Baltimore & Potomac (B&P) Tunnel Project: To Address the Structural and Operational Deficiencies of the existing B&P Tunnel, Improve Passenger Rail Services... (Prior:MD20150515-0391)

PROJECT APPROVAL

This project/plan was: ☐ **Approved** ☐ **Approved with Modification** ☐ **Disapproved**

Name of Approving Authority: ____

Date Approved: ________________

FUNDING APPROVAL

The funding (if applicable) has been approved for the period of:

________________________, 201___ to ________________________, 201___ as follows:

Federal $: ____________	**Local $:** ____________	**State $:** ____________	**Other $:** ____________

OTHER

☐ *Further comment or explanation is attached*

NATIONAL RAILROAD PASSENGER CORPORATION
60 Massachusetts Avenue, NE, Washington, DC 20002
Tel 202 906.3960 fax 202 906.2850

AMTRAK

Joseph H. Boardman
President and Chief Executive Officer

February 10, 2016

Mr. David Valenstein
Division Chief
Environment and Corridor Planning
Office of Railroad Policy and Development
USDOT Federal Railroad Administration
RPD- 13 W38-314
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: National Railroad Passenger Corporation (Amtrak) Comments
Draft FRA Environmental Impacts Statement (DEIS)
B&P Tunnel Replacement Project, Baltimore, Md.

Dear Mr. Valenstein:

Amtrak has reviewed the Draft Environmental Impact Statement (DEIS) for the B&P Replacement Tunnel Project (*DEIS & Section 4(f) Evaluation*; *Baltimore and Potomac Tunnel Project; Baltimore, Maryland; December 2015*) and is pleased to transmit these comments. Amtrak appreciates the diligence and precision with which the FRA has undertaken the NEPA process for this project, as the tunnel design is outdated, and the tunnel structure is aged, costly to maintain, and needs replacement. Amtrak welcomes the opportunity to work with the FRA to shape and further refine the tunnel replacement options to minimize local and community impacts while maximizing the transportation benefits of a replacement. Amtrak, as a good steward of the NEC, is also committed to mitigating any impacts of the project that cannot be avoided, in consultation with the FRA, MDOT, the City of Baltimore and local representatives.

Importance of the Project

Amtrak views the B&P Tunnel replacement project as critical to Amtrak's continuing efforts to modernize its Northeast Corridor (NEC) and associated intercity and commuter rail services. A new tunnel will reduce operating and maintenance (O/M) costs, ensure continuing safe and reliable service, and build upon Amtrak's four-decade-long effort to increase NEC train speeds and reduce travel times as it replaces, upgrades and modernizes older or antiquated equipment and facilities. Replacement of the tunnel is not only a modernization project. It also avoids the potential loss of NEC service in its entirety should the tunnel become unsafe due to age-related deterioration.

Over the past 40 years, Amtrak and its federal, state and local partners has spent billions of dollars upgrading NEC infrastructure and equipment to ensure that it can offer its customers higher speeds, shorter travel times, and more frequent and reliable service. In replacing the B&P Tunnel, it is essential that the selected alternative enables Amtrak to maintain the NEC as a high-quality rail service for commuter and intercity passenger rail services through the 21st Century and beyond.

As noted in the DEIS, the existing two-track B&P Tunnel is beyond its useful service life structurally, and its sharp curves restrict train speeds. It is a slow-speed bottleneck that hobbles both Amtrak and MARC as they work to provide higher-speed, dependable rail services. As such, the tunnel represents a late 19th Century vision of regional rail service, a vision which is out of date and incapable of satisfying the demands of current and future rail passengers. Amtrak therefore welcomes FRA's decision to sponsor the necessary studies and analyses that will permit the B&P Tunnel replacement project to advance.

Amtrak is sensitive to the fact that while the B&P Tunnel project's benefits are both regional and local, its impacts are local. Amtrak is eager to assist in refining the selected project alternative to minimize these impacts while still providing rail system improvements that eliminate bottlenecks and raise overall network performance. In this spirit, Amtrak will provide input on its preferred alternative and provide comments on other aspects of the DEIS.

Amtrak's Preferred Alternative
The No Build Alternative is not a viable option. It does not meet the project Purpose and Need and fails in virtually every respect to progress NEC services to meet future MARC and Amtrak passenger demand. Moreover, it leaves the NEC vulnerable to a major outage should the tunnel fail, as there is no practical bypass through Baltimore that avoids it. Of the three "build" alternatives discussed in the DEIS, however, Amtrak wishes to express in the strongest possible terms its preference for either of the two higher-speed Alternatives – 3B and 3C – modified and refined as may be possible to minimize community impacts.

The Importance of Speed Increases on the NEC
Since the Northeast Corridor Improvement Program (NECIP) era beginning in 1976, Amtrak has been making incremental improvements to increase service reliability and speed. These investments have cumulatively delivered significant changes in the inter-city rail experience, amounting since 1980 to between a one-hour and a one-and-one-half hour reduction (Regional vs. Acela) of the travel time between New York City (NYC) and Washington, DC. Equivalent improvements have been made over the Boston-to-NYC leg.

These incremental investments demonstrate recognition by Amtrak and the FRA that higher speed and shorter travel times are critical if passenger rail service is to compete with the private automobile and airlines serving this corridor. Over time, this concept has been ratified by experience – as trip times have shortened, ridership and rail market share have grown, demonstrating that travelers favor faster rail service over other modes of transportation.

Amtrak and many other rail systems nationally and internationally can demonstrate a strong relationship between market share and travel time. For Amtrak, the evidence is compelling: prior to the completion of the electrification of the NEC between New Haven and Boston between 1980-2000, Amtrak travel times between Boston and New York were approximately 4:10 (express service, trips were slower for local/regional services).[1] With electrification and various track improvements over the past 40 years, which have in turn allowed introduction of high speed Acela equipment in the last fifteen years, that trip time is now approximately three and one-half hours (3:30). Because of this Improvement, Amtrak's share of the Boston-New York travel market has expanded from 5.9%[2] to 54%[3].

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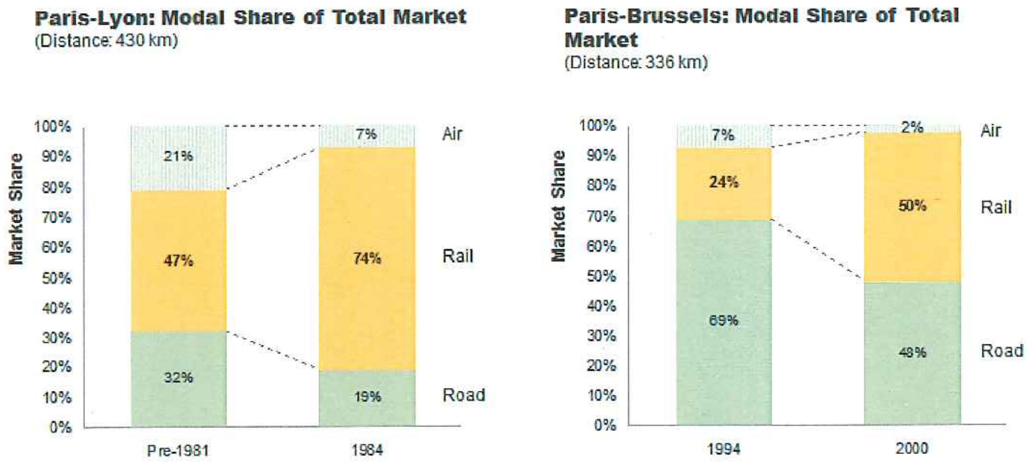
[1] Source: Table 4.9-2 from the Final Environmental Impact Statement/Report and 4(f) Statement; Northeast Corridor Improvement Project – Electrification New Haven, CT – Boston, MA, 10/31/1994

This same relationship between speed and ridership is still evident today through a comparison of market shares between the NYC-Washington, DC, and the NYC-Boston segments of the NEC: where the former enjoys a 2.5-hour express service travel time, and the latter a 3.5-hour express service travel time for approximately the same distance (Boston is 6 miles further than Washington, DC, from NYC), the rail market share among air/rail travelers is 80% for the former and 54% for the latter. (Flight times are approximately equal from NYC to either Boston or DC, at slightly over an hour.) Clearly, speed matters in attracting rail ridership on the NEC.

The relationship is equally valid elsewhere. Data from France's Train à Grande Vitesse (high-speed train, or TGV) program (Figure 1) show that the TGV's market share grew significantly among competing modes compared to the slower-speed train service that preceded it, while corridor market share for air and automobile shrank.


Paris-Lyon: Modal Share of Total Market
(Distance: 430 km)

Paris-Brussels: Modal Share of Total Market
(Distance: 336 km)

Figure 1 – France TGV Program Improvements in Intercity Rail Market Share
(Source: UIC High Speed Rail November 2000, Rail International Sept/Oct 1998.)

The same result has been seen in other high-speed rail corridors in France, Japan, and Germany (Figure 2). As travel time decreased, market share increased, in a generally linear relationship.

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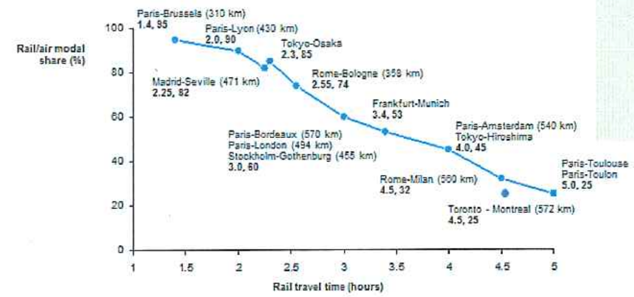
[2] Source: Table 4-59, IBID.

[3] Source: Amtrak Department of Planning, January 26, 2016



Rail Travel Times	Approximate Rail Market Share[1]
<2h	>90%
2.5h	~80%
3h	~60%
4h	40-50%
5h	20-30%

Figure 2 – Market Share as a Function of Travel Time for High-Speed Rail Corridors (Sources: Paris-Lyon: http://www.southeastalleance/com/files/businesscase2028-03.ppt#410,6, slide 6 citing Air Inter; Thalys; McKinsey&Co.; CER Paris-Brussels: UIC, CER & UNIFE, *High Speed Trains in Europe* (October 2002) at 5, available online at http://www.cer.be/files/Br_01_10_2002_ENb-112515A.pdf)

This relationship holds true in other U.S. rail corridors. When NJ TRANSIT opened the Kearny Connection (allowing the introduction of its *MidTOWN Direct* train service) between Morris & Essex line stations and midtown-Manhattan jobs, reducing the trip by approximately 15 minutes and eliminating a transfer, NJ TRANSIT concluded that "***After MidTOWN DIRECT, M&E annualized rider growth [sic] more than twice the rate of core lines***" (Figure 3).

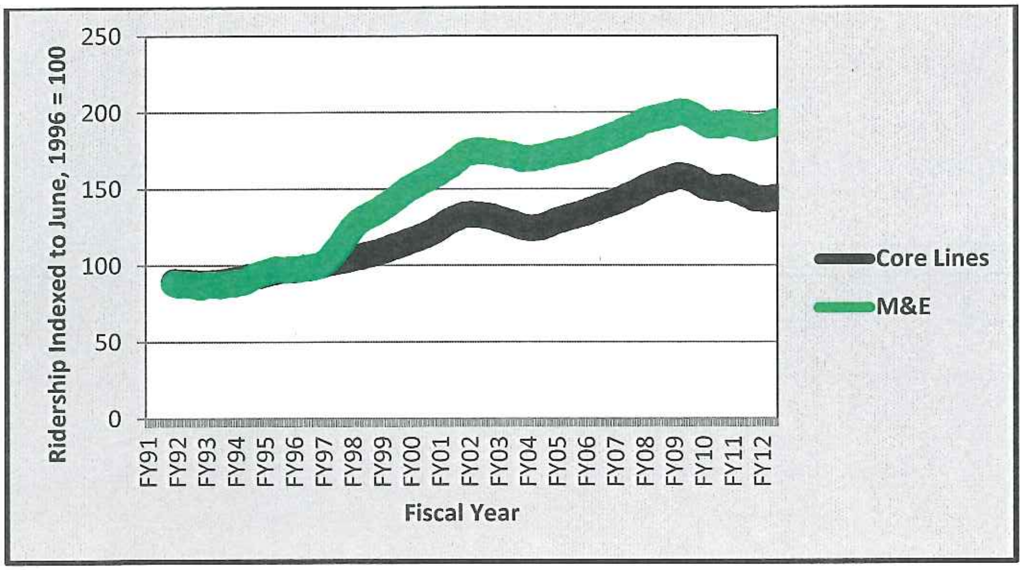


Figure 3 – M&E growth rate 1998-2003 Compared to System Core Lines (SOURCE: NJ RANSIT: Impact of NY Penn Service Improvements On Rail Line Ridership Trends; March 2012)

NJ TRANSIT showed the same speed-ridership relationship upon its completion of the *Montclair Connection,* which converted a two-seat to a one-seat ride to midtown Manhattan and saved 20 minutes for most riders. NJ TRANSIT's data for ridership growth on the Montclair-Boonton line over the next five years showed, *"After Montclair Connection,* ***Montclair-Boonton annualized ridership growth [sic] almost six times the rate of core lines" (*** Figure 4).

NJ TRANSIT recorded similar results with its *Secaucus Transfer* station, which replaced a long and circuitous route to midtown Manhattan with a simple transfer, saving approximately 20 minutes. The result, *"After Secaucus Junction,* ***Main-Bergen-Pascack annualized ridership growth* [sic] *more than three times the rate of core lines*"** (Figure 5).

More recently, and looking to the 21st Century, under its Sustainability Program, Amtrak in November 2015 signed the *International Union of Railways (UIC) Railway Climate Responsibility Pledge*. This international partnership demonstrates Amtrak's commitment to a global effort toward a cleaner transportation future within and beyond U.S. borders. Among other goals, by signing the pledge, Amtrak has committed to "Stimulate modal shift to rail in national and international markets." Such a shift is accomplished most immediately and reliably by increasing speed and reducing travel time, while maintaining a high level of amenity and customer services on trains and in stations. A higher speed B&P Tunnel furthers this goal.

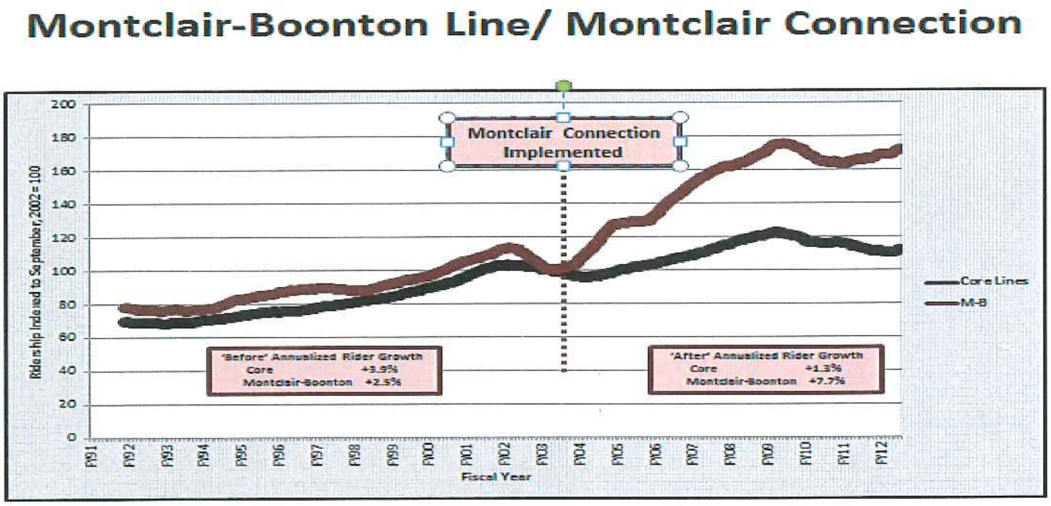


Figure 4 – Montclair-Boonton Line Growth Post Montclair Connection (2002) (SOURCE: NJ RANSIT: Impact of NY Penn Service Improvements on Rail Line Ridership Trends; March 2012)

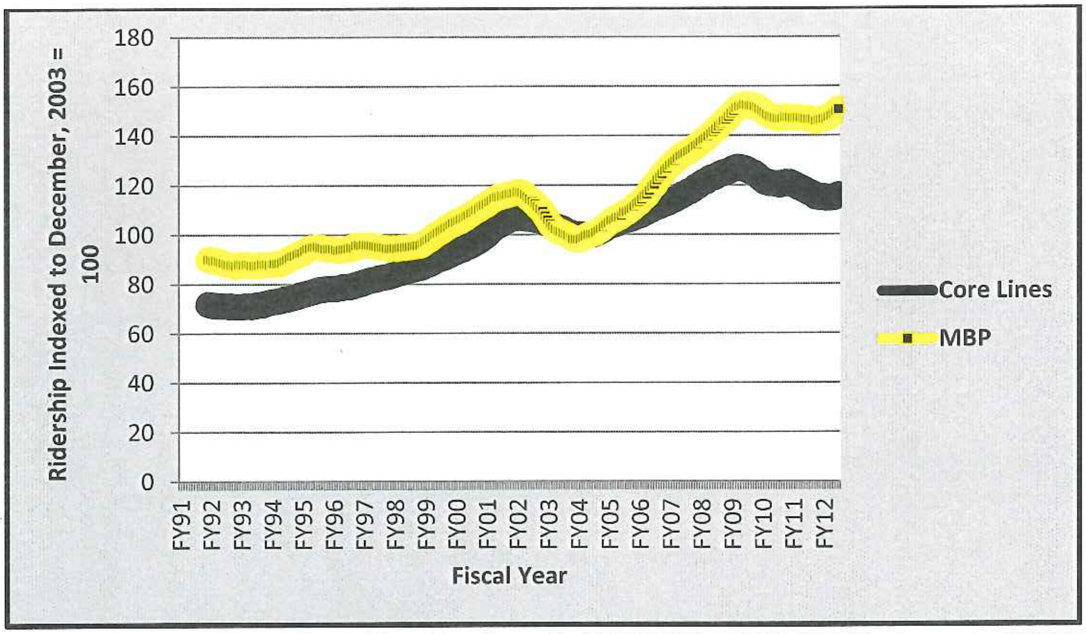


Figure 5 – Secaucus Transfer Ridership Growth (SOURCE: NJ RANSIT: Impact of NY Penn Service Improvements on Rail Line Ridership Trends; March 2012)

So it is clear that railroad operators and political leaders must cooperate in making investments that increase speed if Amtrak rail services are to maintain their dominance in the NEC.

Increasing Speed – The Challenge

Amtrak inherited a rail system from a time when general design policies produced rights of way with numerous curves and other impediments that limited speeds to 50-60 mph. The result was a train route featuring up to 4-5-hour travel times between NYC and Boston and 3.5-4-hour travel times between NYC and Washington, DC, through much of the twentieth century. (The NYC-Boston leg has many more sharp curves, and is therefore slower.) Yet the tremendous cost of any realignment of in-place rail rights of way to straighten curves introduces difficult challenges because, once the NEC was established, adjacent land developed rapidly, particularly in densely-settled cities.

Despite these physical challenges and despite constrained funding resources, incremental travel time improvements to the NEC have been made as part of the Northeast Corridor Improvement Program (NECIP) of the 1970-80s, the Northeast High Speed Rail Improvement Program (NHRIP) of the 1990s, and Amtrak's "101 Projects" program in the past decade. These programs all contained speed improvements in recognition of the critical importance of reducing travel times to sustain the region's economic vitality and mobility. As an example of the benefits realized from these improvements, Curve 401 north of Bowie, Md. was flattened during the NECIP program to increase the train speed from 90 mph to 125 mph, saving approximately 16 seconds. In 2014, some 30 curves were modified for the State of Michigan between Kalamazoo and Battle Creek to increase speeds from 70-79 mph to 110 mph. None of the curve modifications, individually, contributed much in the way of travel time reduction but, collectively, they significantly reduced scheduled run times. By accomplishing this program, these thirty curves, which average 3,000 feet in length each, collectively produce an overall travel time reduction of approximately 3.5 minutes for every train.

Most of these curve improvements were able to be accomplished by adjusting track within the ROW. Future speed increases may not be able to be accomplished as easily, however, but will likely impose impacts to adjacent land uses if the right of way has to be physically relocated to flatten its degree of curve. Surgical investments to straighten curves and eliminate other impediments to high-speed travel must now be carefully implemented to gain continued improvement while minimizing local impacts.

Beyond the straightening of curves, Amtrak has made other investments to raise the performance of the system and increase speeds (and also to accommodate twice the number of trains since its beginnings in the mid-1970s), as follows:

- The electrification program of the NEC between New Haven and Boston permitted higher-speed and higher-performance locomotives to operate on this route, saving in total approximately one hour on the four and one-half hour trip in the 1995-2000 period;
- The installation of concrete ties in place of wood, use of heavier rail, and installation of higher-speed turnouts has allowed trains to move at higher speed without unacceptably straining the track system;
- The use of "constant tension" overhead catenary systems (OCS) allows 145-160 mph operation in place of the 125-135 permitted with standard catenary systems. For each ten miles of replaced catenary (at a cost of approximately $25M), the speed differential can save 28 seconds. Of the 450 miles of NEC track, about 100 miles can support 150 mph operation, saving about six minutes if totally converted to the new OCS standard;
- The use of improved miter rails on moveable bridges and concrete-tie turnouts; such improvements typically increase speeds through the area from 40-45 mph to 60-70 mph; and
- The Acela and ACS high-speed locomotive programs that have – with supporting infrastructure in place as noted above – permitted operations above 135 mph for express runs over the straighter segments of track.

Through these programs and projects, Amtrak has made immense progress in creating a high-quality passenger rail experience. The traveling public has voted with its feet, and is looking forward to further gains in rail travel efficiency. The B&P Tunnel project higher-speed alternatives should be viewed as part of this larger, network-wide improvement program aimed at producing continually higher speeds, shorter travel times, and increased ridership as the NEC population continues to grow.

Curve 381 at West Baltimore Station

Improving Curve 381 at the West Baltimore Station is part of this continuing process. Rail travel at this curve is limited to 55 mph, just a thousand feet south of the southern portal of the proposed B&P tunnel. Until now, and since the existing B&P Tunnel just east of this location is limited to 30 mph, it has not been worthwhile to consider upgrading the curve, as trains exiting the tunnel southbound at 30-40 mph cannot reach much more than 55 mph by the time they enter Curve 381. Beyond the curve (southbound), trains accelerate to much higher speeds of 125-135 mph (with further increases possible once additional signal system upgrades are completed) to complete the trip to Washington DC.

With a new, 100 mph tunnel, however, Curve 381 will become a chokepoint in the system, one that cannot be further improved once the tunnel portals are set in their place. The opportunity to improve Curve 381 is therefore a one-time chance that should be included in the B&P Tunnel Preferred Alternative decision. With an unimproved curve continuing to constrain train speeds to 55 mph, the potential speed gains available through the immense investment in the new tunnel will be largely forfeited for the life of the new tunnel, perhaps a century or more. In addition, the slowing and re-accelerating that are required to negotiate changing track speeds between the high-speed tunnel and the lower-speed curve will translate into a century of increased energy consumption and increased need for mechanical maintenance of parts (rolling stock and rail) that suffer additional wear and tear from the acceleration and braking necessary to slow for the curve and speed up beyond it. Failing to address Curve 381 now will therefore both retard the level of service and increase its day-to-day costs for the life of the new tunnel, compared to a design that could, with careful management of local impacts, allow continuous 100-125 mph operation from Baltimore Pennsylvania Station south to Washington, DC, and the associated increase in overall network capacity between NYC and Washington, DC, that the higher speed delivers.

Correcting Curve 381 is not a trivial engineering undertaking, and it is costly. In 1928, the Pennsylvania Railroad (the former owner of this portion of the NEC) developed its "Baltimore Improvements" program, which was to have constructed a new tunnel bypassing the existing B&P Tunnel, and upgrade this entire section of the railroad (including Curve 381 at West Baltimore Station). Because of the Depression, however, much of the program was not implemented. After WWII, with auto travel becoming the preferred means of travel, the PRR's financial circumstances turned downward, ending in its bankruptcy in 1972 and the eventual transfer of its assets to Amtrak and Conrail in 1976. And the "Baltimore Improvement" (including Curve 381) was never implemented.

Curve 381 is situated on a section of right of way that is surrounded on both sides by residential neighborhoods and commercial and historic properties. To smooth the curve requires shifting the right of way, which can only be accomplished by demolishing some of these buildings. But with elimination of this impediment, trains will be able to realize a significant speed benefit over the entire segment between Baltimore Pennsylvania Station and West Baltimore Station, improving network performance throughout the NEC and beyond.[4]

Amtrak's Recommendation
Given the above, Amtrak recommends that the FRA select either of the higher-speed alternatives 3B or 3C as the Preferred Alternative, for the following reasons:

a. Prior studies note that the B&P Tunnel constitutes a choke point, with the lowest speed limit on the entire NEC, limiting system capacity and likely to produce increasing local train congestion as Amtrak and MARC ridership and train frequencies increase with projected future increase in travel demand. Alternatives 3B and 3C provide significantly higher average speeds than Alternative 3A by extending the improved, higher-speed alignment of the new tunnel through Curve 381 at the MARC West Baltimore Station.

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[4] Because congested areas like Baltimore can be impediments to travel, long-distance trains are frequently scheduled to avoid these areas during peak periods, preventing the use of more market-responsive schedules travelers seek. With elimination of slower sections and increases in throughput capacity at major junctions, this ripple effect can be lessened and improved schedules offered to cross-country travelers.

b. The failure to smooth Curve 381 under Alternative 3A leaves the MARC West Baltimore Station incapable of being reconstructed with high-level platforms at its current location.[5] Absent raised platforms at the current location, MARC will have to move the station south such that commuters will have a long walk from the commuter parking area to board trains. Further amplifying the benefits of the improvement, with high-level platforms at the station, dwell times will be reduced, further speeding service compared to current low-level boarding platforms.
c. Opportunities exist to refine Alternatives 3B and 3C via additional design development to reduce their local and community impacts.,
d. Alternatives 3B and 3C would impose no greater maintenance or operating costs on Amtrak than Alternative 3A, while giving significant speed, ridership and revenue benefits.
e. Alternative 3B largely avoids the Flannigan property; Flannigan is an important local employer.
f. While Alternatives 3B and 3C both involve residential relocations, these can be minimized through more careful alignment design and reductions of limits of disturbance at critical points to avoid takings or the loss of historic structures. Amtrak will work with local community representatives, the City of Baltimore, MDOT and the FRA to minimize harm to those affected, and to mitigate unavoidable impacts.

Given these characteristics of the higher-speed Alternatives 3B and 3C, recognizing that a central goal of the entire national rail program is to increase travel speed, and acknowledging the need to address any local impacts with maximum sensitivity and care, Amtrak finds Alternatives 3B and 3C to be greatly superior to Alternative 3A and recommends the selection of one of them.

Other Comments

Amtrak has the following additional comments on the DEIS, covering Ventilation, Waste Removal during Construction, Freight, 4-Track vs. 2-Track Tunnel, Disposition of the Existing Tunnel, the Air Quality Report, Executive Summary, Body of the DEIS, and Amtrak Responses to Recorded Public Comments – Appendix H, as follows:

Ventilation

Location: The DEIS correctly notes the need for an Intermediate Ventilation Facility (IVF), and proposes a potential location for such a plant on the City-owned parcel currently serving as an informal community park and garden. Amtrak affirms the criticality of such a facility to comply with modern fire and safety codes, and to allow design of a tunnel system that can meet the FRA's *NEC Future* study goal of 2-minute headways. Amtrak will assist the FRA (and, by extension, the local community) to site such a plant to be maximally compatible with nearby land uses and activity centers, while remaining operationally efficient. The DEIS shows two photos of such contextually-sensitive ventilation facility designs from other projects; similarly unobtrusive structures would be designed for the Reservoir Hill area or other site locations.

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[5] The curve is too sharp to permit manageable gaps between boarding platforms and train floors due to the curved edge of the platform conflicting with the straight edge of the rail car.

Exhaust Filtration: Although not a subject of the DEIS, comments during public meetings indicated local concerns with the need for filtration systems on the ventilation plants to achieve higher air quality in the vicinity of the plant. Ventilation system design does not, however, incorporate filtration or pollutant removal technologies to address tunnel air pollution, as the system accomplishes the same result through dilution of polluted tunnel air with fresh air. The IVF operates best if its exhaust fans can force the maximum volume of air out of the tunnel air in the shortest possible time, and filtration technologies would retard this capability. By slowing the rate at which polluted air is evacuated from the tunnels, filtration systems potentially create an unsafe air quality condition in the tunnels for passengers, crews, and emergency responders. The IVF will be designed to ensure that all applicable air quality standards are met outside the IVF exhaust louvers and that community air quality is protected.

Waste Removal During Construction
Amtrak notes that waste removal during construction of new tunnels will be comparable for any of the three build options, and is not therefore a factor in selecting one over the others. Amtrak is sensitive, however, to the community's interest in minimizing truck traffic through residential neighborhoods during construction regardless which alternative is selected. Amtrak will work with the FRA to investigate whether any of the tunneling waste material can be transported away from the site by rail, with the goal of minimizing total truck traffic caused by the project. For waste materials that must be hauled by truck, efforts will be made to coordinate with local traffic agencies to minimize truck traffic through residential neighborhoods.

Freight
Amtrak must preserve freight operators' ability to run on the NEC. Amtrak acknowledges that tunnels that may accommodate double-stack freight trains have potential economic benefits to Baltimore. However, although the project would create double-stack- capable tunnels, existing infrastructure north and south of the tunnels cannot currently accommodate double-stack equipment. Therefore, although the tunnels will permit double-stack operations, such benefits would not be realized until clearance projects not the subject of this study can be implemented on connecting sections of the NEC. The FEIS should be worded to avoid public expectation of double-stack freight trains through the new tunnel until these many other projects have been completed. And, given the tone of comments at public meetings, the FEIS should be clear that the purpose of the project is not to induce double-stack freight traffic through the new tunnel, but merely to accommodate it if and when private freight rail operators see a need and successfully clear a path for such equipment.

Four-Track vs. Two-Track System
Slow-speed chokepoints like the B&P Tunnel and Curve 381 affect more than just the trains passing them; their effects ripple through the entire rail network, resulting in poorer overall network performance, lower capacity, fewer service options and, ultimately, difficulty meeting increases in future travel demand. Because Baltimore is a key "overtake" point – where high-speed Acela trains generally "catch up" to Regional and MARC commuter trains sharing the same tracks – the need to address the B&P Tunnel and Curve 381 chokepoints is compelling. Network performance between Boston and Washington, DC, is affected by the lack of capacity caused by these slow-speed conditions; until they are speeded up, trains all along the NEC are limited as to how quickly they can travel, with Baltimore being a key congestion point that slows the entire network.

Besides reducing freight/passenger train conflicts, a four-track system through Baltimore will better accommodate projected increasing train traffic among Amtrak, MARC and freight services. All three build alternatives feature universal interlockings among four tracks at both ends of the tunnel, giving Amtrak maximum flexibility in maintaining train schedules through what is expected to be an increasingly heavily-trafficked area as ridership and train traffic increases. Current daily schedules already call for two-minute headways between following trains in a few instances. As train volumes increase with increasing ridership, these close headways will become more frequent, and a four-track, segregated high- and slower-speed rail system will accommodate this growth while avoiding the congestion and delays that might otherwise emerge on a two-track system. Four tracks also provide operational redundancy to maintain operations during abnormal conditions – stalled trains, tunnel closed for maintenance, etc. Given the expected volume of future rail traffic, as identified in the FRA's *NEC FUTURE Tier I DEIS*, a four-track solution is required for the tunnel; to simply replace the existing tunnel with another sub-standard facility would be shortsighted, and could crab regional growth by limiting train capacity among major NEC job centers.

Should the decision be made to implement only two of the four tracks in the short term, reserving the implementation of the other two tracks for a later time, it is all the more important to reach for the highest-speed solution addressing both tunnel speeds and speeds through Curve 381, to minimize the potential retardant effect of this chokepoint on regional system capacity and network performance. It should be noted that such a two-track tunnel system would still require ventilation plants of size equal to those proposed in the DEIS, at the same location; community participants should not be led to assume that a two-track tunnel would allow a smaller ventilation plant.

Disposition of the Existing Tunnel

The DEIS is unspecific as to the disposition of the existing (original) B&P Tunnel after the new tunnels are built, and discusses several potential future uses. Amtrak wishes to state its overwhelming preference that the original tunnel be reserved for a future rail transportation use. Amtrak requests that FRA reflect this preference along with the Preferred Alternative selected for inclusion in the final environmental impact statement (FEIS).

Air Quality Report

The DEIS and supporting Air Quality Technical Report need to be clear that the deminimus increase in NOx and particulates for the build alternatives is due only to the new tunnel being slightly longer compared to the length of the existing tunnel. The report should be clear that the increase in emissions that will be caused by MARC's conversion of its fleet to 100% diesel locomotive propulsion (p. 14) – which would happen whether the tunnels are built or not – is not attributable to any of the build alternatives or the project 0 this conversion will occur even if no new tunnel is built. Because MARC will make this change, and its emissions will therefore increase locally, the higher speed alternatives are again preferred, as they will result in lower pollutant concentrations than would the slower-speed Alternative 3A or the No Build alternative.

Executive Summary

Executive Summary (Page ES-4): "*From an engineering standpoint, Alternatives 3A, 3B, and 3C: Have identical maximum and minimum design speeds*."
While Amtrak agrees that the three alternatives have identical maximum design speeds, this comparison leaves the incorrect impression that they are functionally equivalent in trip time and performance. While the design speed for the portal-to-portal tunnel segment would be essentially equivalent among the three alternatives (at 70 mph for the outside local tracks and 100 mph for the inner express tracks), the alignments for Alternatives 3B and 3C both smooth Curve 381 at West Baltimore station such that maximum allowable speeds (MAS) past the station for high-speed trains would be 100 mph, rather than the 55 mph MAS that would be the case for the unimproved curve under Alternative 3A. Because trains cannot speed up and slow down quickly over short distances, the lack of a high-speed curve at West Baltimore Station under Alternative 3A will result in most trains – even high-speed Acela trains – leaving Baltimore Pennsylvania Station southbound operating at only 55-70 mph through the tunnel, and then slowing to 55 mph until they pass this curve. Amtrak trains (which do not stop at West Baltimore Station) leaving BPS under Alternatives 3B and 3C would accelerate directly to their top 100 mph speed and maintain that speed for the balance of the trip to Washington DC, (except over sections permitting 125-135 mph farther south). This produces a faster and smoother ride between Baltimore Pennsylvania Station and points south than would be possible with Alternative 3A, with an overall higher average operating speed over the length of the study area, between Gwynn's Falls bridge and Baltimore Pennsylvania Station. The final EIS should clarify this distinction among the alternatives.

Executive Summary (Page ES-5): *Alternatives 3A, 3B, and 3C differ from one another primarily with regard to the location and impact of the south portal, and their impact to the existing West Baltimore MARC station.*
Amtrak disagrees with this statement as a summary of the salient differences among the alternatives. Amtrak views the higher speed capabilities of Alternatives 3B and 3C as a significant distinction between these alternatives and Alternative 3A. The failure to discuss in the DEIS the higher speed capabilities of Alternatives 3B and 3C is in Amtrak's opinion a disappointing omission, since improvement of trip times has been one of Amtrak and FRA's primary investment goals for 40 years. Amtrak believes that this sentence should read: "*Alternative 3A is broadly distinct from Alternatives 3B and 3C, in that Alternative 3A, while having somewhat fewer community impacts in terms of property requirements and impacts to historic resources, does not achieve a significantly higher speed than the existing tunnel, and therefore significantly underperforms relative to Alternatives 3B and 3C in terms of the basic project purpose and need.*"

Executive Summary (P. ES-5): *Alternatives 3B and 3C would impact the Station and reconstruct a new West Baltimore MARC Station as part of the Project in the same location as the existing station.*
This sentence is incomplete for failing to note that Alternative 3A's lack of improved track geometry at West Baltimore Station either prevents conversion of the station to be fully accessible at its current location or requires its relocation farther from existing commuter parking so that high-level platforms could be built along straighter track to the south of the existing location. Amtrak thinks that this sentence should read: "*Alternative 3A would not modify the track at West Baltimore station to allow high-level platforms to be built at the current location, near established commuter parking. Alternatives 3B and 3C would modify the track geometry at this location so that MARC could reconstruct the West Baltimore*

Station to incorporate high-level platforms in compliance with the Americans with Disabilities Act (ADA) at the current location, immediately adjacent to established station commuter parking. This is an important distinction in that the MARC plan to relocate the station 500' south of its current location to permit construction of high-level platforms under Alternative 3A would either require MARC to convert adjacent residential and commercial land uses to commuter parking at the new station location, or would subject daily commuters to a lengthy walk between the relocated boarding platforms and the existing commuter parking area."

Executive Summary Table 2, item 17 (page ES-7): "*West Baltimore Station in proximity to MARC (commuter) parking. Alternative 3A – Yes."*
Amtrak disagrees that a relocated West Baltimore station would continue to be proximate to the adjacent MARC commuter-parking area. Relocation of the station 500' south to straighter track would require much longer walks for commuters using the existing MARC parking area.

Executive Summary Table 2, item 37 (page ES-10): For Alternative 3A, the report offers the following evaluation of the degree to which the alternatives impact and are compatible with the MARC West Baltimore Station Master Plan: "*None (impacts) – Compatible with West Baltimore MARC Station Master Plan*."
Amtrak is concerned that this representation leaves the reader with the impression that Alternative 3A is benign with respect to its impact on MARC commuters. The DEIS indicates on Page 16 that the Master Plan has the following purpose: The *West Baltimore MARC Station Master Plan (Transit-Centered Community Development Strategy)* identifies improvements to the Penn Line and West Baltimore MARC Station that would reduce the amount of time between trains (Baltimore City and MDOT, 2008). The proposed improvements would allow a decrease from 25-minute to 15-minute headways during rush hour, from once an hour to once every 30 minutes in non-rush hour times, and providing late evening and weekend service. The MTA has been considering the potential to create accessibility, in compliance with the Americans with Disabilities Act (ADA), to the West Baltimore MARC Station. One method to accomplish this is to relocate the existing MARC platforms several hundred feet south of the existing West Baltimore MARC Station (emphasis added.) Under Alternative 3A, MARC would relocate the station 500' south to a point along the NEC with straighter track, to permit the construction of high-level platforms that would enable MARC to offer service at this station to persons with disabilities, in compliance with the ADA. While Alternative 3A is therefore "compatible" with MARC's plans in the most literal sense, in fact, the station relocation would create an inferior solution from a transportation standpoint compared to reconstructing the station with high-level platforms at its current location as would be possible under Alternatives 3B and 3C, preserving the close relationship between the boarding platforms and the existing MARC commuter parking and allowing existing adjacent buildings to be redeveloped close by the reconstructed station (thus furthering opportunities for local TOD redevelopment at the Ice House and other surrounding historic buildings). Further, on page 32, the DEIS notes that a reason contributing to the FRA's valid decision to discard Alternative 11A is: *Potentially severe impact to redevelopment efforts envisioned in the West Baltimore MARC Station Master Plan due to relocation of the station away from planned redevelopment properties and demolition of the American Ice Company building, a centerpiece of the plan.* Given these conditions, this finding should instead be worded: "*For Alternative 3A, the West Baltimore MARC Station Master Plan envisions relocation of the*

station south, some 500' from its associated commuter parking area. Although Alternative 3A is therefore technically "compatible" with MARC's West Baltimore Station Redevelopment Plan, this alternative would obligate commuters to a long walk to/from their cars to/from boarding platforms, or the conversion of adjacent land uses otherwise available for redevelopment to commuter parking."

Page ES-14: *The DEIS compares the impacts of the Build Alternatives to the No Build and to each other. Alternative 3A has no high and adverse impacts, whereas Alternative 3B and Alternative 3C have high and adverse impacts in the following areas: property acquisition; housing displacement; land use/zoning; visual quality; community facilities; and noise.*
Amtrak appreciates that Alternatives 3B and 3C have greater local and community impacts than Alternative 3A. However, Alternative 3A – which includes an intermediate vent plant at the Whitelock Street community garden site, the likely relocation of the Flannigan aggregate business, and the reconstruction of the West Baltimore Station 500' south of its current location and away from its associated parking – cannot be said to have no high and adverse impacts. Certainly, the noise/vibration and residential and commercial property impacts of Alternatives 3B and 3C are higher than those for Alternative 3A. But the difference is of degree not type, and the finding should be worded so that the Alternatives are properly compared in terms of specific impact areas, rather than in terms of a broadly defined general category (high/adverse). This is especially important in the Executive Summary, which many readers will consider the final word on the material in the DEIS. This statement leaves the reader with the impression that Alternative 3A is benign, while Alternatives 3B and 3C are greatly damaging to the local community. The differences between the higher-speed Alternatives 3B and 3C and the lower-speed Alternative 3A are not as extreme as this sentence implies. Also, as noted in question 5, Alternative 3A would require adopting a remote and greatly inferior West Baltimore station location since it is not possible to incorporate high level platforms on the 3A alignment, thus creating a new set of impacts not found in 3B or 3C.

Body of the DEIS
Page 146: *Impacts*
The DEIS notes that nine commercial businesses are affected by Alternative 3B and ten by Alternative 3C, among them the Flannigan site. The DEIS notes in the charts on pages 69-70 that Alternative 3A would impact 6 historic properties, Alternative 3B 8 properties, and Alternative 3C, 10 properties. Concerning the resulting displacements or demolition each alternative would require, Amtrak understands that the analysis of impacts for each alternative was conducted for defined "worst case" "limits of disturbance" (LOD) designed to provide the most generous construction areas alongside the tracks; in most cases, these construction areas were defined to be 50' from the outer retaining wall or fence, adding a linear swath of an additional 100' of local community streets and buildings targeted for removal in order to construct the project.

Notwithstanding that a 50' construction area is preferred for this kind of project, it should be noted that the construction work can be performed in much narrower areas alongside the right of way where the right of way is near street grade. Given that the DEIS notes commercial and residential properties and significant historic structures would have to be demolished to clear the most generous construction "limits of disturbance" for each alternative, Amtrak would expect to work with the FRA to narrow these construction allowances and hope to reduce local impacts and preserve some or many of the at-risk structures noted in the DEIS.

Should such refinements of the limits of disturbance successfully avoid significant numbers of the identified commercial, residential and historic properties noted as impacted by the higher-speed Alternatives in the DEIS, Amtrak presumes that significantly different findings would emerge in the FEIS as to the local impacts that would have to be mitigated for either of the higher-speed alternatives. Amtrak looks forward to working with the FRA on this critical issue, as Amtrak cannot overstate its interest in a higher-speed alternative as the result of this very crucial infrastructure upgrade.

Amtrak's Responses to Recorded Public Comments – Appendix H
Amtrak has reviewed Appendix H comments by public participants, and offers the following:

Appendix H, P. 2: *The present B&P Tunnel which was put in service in 1873 is outdated and unsafe, is an impediment to modern high speed passenger rail service and modern high capacity freight cars which comprise 21st Century American freight trains.*
Amtrak does not agree with a representation that the existing tunnel is currently unsafe for passengers, crews, or maintenance workers. Amtrak maintains the tunnel in conformance with applicable codes and industry standards, and inspects the tunnel regularly for signs of wear and tear warranting repairs. Amtrak performs all indicated repairs immediately. The bulk of tunnel problems involve water intrusion and the wearing of masonry joints and concrete track bed due to water. These problems are recurrent and are leading to the continued degradation of the tunnel's performance. As they are identified, such problems are remedied with new material and the tunnels are kept safe for their purpose. They are adequately ventilated by virtue of the two mid-tunnel openings, structurally sound, and maintain proper track geometry allowing safe passage of trains at the required speeds. Evacuation procedures are well within standards and Amtrak and local emergency personnel are fully capable of responding to any incident involving either freight or passenger trains that may break down in the tunnel or if there were a fire condition. Because of the existing tunnel's age, however, the frequency and length of service interruptions due to its continued decay are likely to increase until, ultimately, they reach a point where continued safe train operation could be jeopardized, possibly requiring shut down of the tunnel and suspension of NEC services until repairs can be made or the tunnel replaced.

Appendix H, P.7: *Please define what is meant by infeasible geometry.*
"Infeasible geometry" refers to track that is either too steep for trains to climb (grade greater than 2%, or two feet of rise for each 100 feet of horizontal travel), or too sharply curved for trains to negotiate at a required speed without derailing. As train speeds increase, the sharpness of curved track that they can negotiate without fear of derailing lessens. Where a particular alignment requires the use of track curves or grades that cannot be negotiated by trains at the desired speed, that alignment is considered to be fatally flawed and not worthy of further study.

Appendix H, P.8: *Are the proposed alternatives compatible with Amtrak's plan for high speed rail through the existing West Baltimore MARC station of* [sic] *is this being proposed as a separate project?*
Of the three current build alternatives contained in the DEIS, two – Alternatives 3B and 3C – are compatible with Amtrak's plan for high speed rail through the West Baltimore station. These two alternatives smooth the curve at this station such that speeds of 100 mph will be feasible for high-speed Acela trains traveling to and from Washington, DC, and Baltimore Pennsylvania Station. Alternative 3A

provides an operating speed of only 55 mph at the West Baltimore Station, which limits the speed of trains traveling through the proposed tunnels to a range between 55 and 70 mph, rather than 100 mph throughout. Therefore, Alternative 3A is not supportive of the high-speed rail program to the same degree as are the higher-speed alternatives.

A number of people have voiced concern about the impacts of construction or train operation on the neighborhood located above the build alternatives. The construction of new tunnels 100' – 150' beneath the Reservoir Hill neighborhood would have no discernible impact on the community or buildings at the surface. Neither boring to construct the tunnels, nor operating high-speed trains at that depth, is expected to create measureable vibration in the buildings above. The noise and vibration findings expressed in the DEIS relate to impacts to properties at the portals, where the trains and tunnel are shallower or out in the open. While the tunnel's construction and operation under Reservoir Hill will not cause measureable noise or vibration in the Reservoir Hill area, creation of any of the build alternatives will require the construction of an intermediate ventilation facility (IVF) in the Reservoir Hill or nearby commercial area. Construction and operation of the ventilation facility should have no noticeable noise or vibration impacts to surrounding community or adjacent structures.

Appendix H, P.10: *It would be ideal for the new tunnel construction, Alternative 3 or 11 to be tall enough for Amtrak Superliner railcars and double stack Norfolk Southern trains.*
Currently, the NEC does not feature sufficient vertical clearance to allow double-stack operation in most places, as most of the bridges and spanning infrastructure were built for single-stack freight cars, before double-stack train systems were invented. Therefore, before double-stack trains can operate through the B&P Tunnel, many nearby bridges, tunnels, and signal trusses north and south of the tunnel – as well as the station mezzanine and platform canopies at and the underpasses beneath the streets surrounding Baltimore Pennsylvania Station – would have to be raised at significant cost before a double-stack route could be established through the new tunnels.

Conclusion
Over the past 40 years, substantial investments have been and will continue to be made to gain speed and reduce travel time, with the proven result that this yields better and more desirable service for rail passengers. In keeping with this history, Amtrak strongly prefers Alternatives 3B and 3C to Alternative 3A, as these alternatives are in keeping with Amtrak's long term capital investment program goals. Amtrak recognizes that local impacts resulting from this project must be handled with great sensitivity to the community, the streetscape, and the built environment, and Amtrak welcomes the opportunity to work closely with FRA, the State of Maryland, and the City of Baltimore to effectuate the least-impact design that accomplishes meaningful improvements in travel time for rail travelers. We anticipate that refinements to either of the higher-speed alternatives can be developed that result in a meaningful and important high-speed rail improvement with only minor local impacts, conferring a 100-year benefit to millions of annual rail travelers, and a net positive for the region.

Amtrak appreciates the opportunity to express its views concerning the DEIS for the subject project, and looks forward to cooperating with the FRA in more precisely identifying the impacts of the alternatives as they are refined, so as to best inform the FRA's selection of a Preferred Alternative for the project. Should you have any questions concerning these comments, please do not hesitate to e-mail or call William Prosser at 215-349-2015 (prossew@amtrak.com), or Michael Stern at (203) 773-6138 (sternm@amtrak.com).

Sincerely,

Joseph H. Boardman
President and Chief Executive Officer

cc: William Prosser
Michael Stern

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

February 26, 2016

Michelle Fishburne, PE
Environmental Protection Specialist
Office of Railroad Policy and Development
USDOT Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Subject: Draft Environmental Impact Statement (DEIS) & Section 4(f) Evaluation Baltimore & Potomac Tunnel Project, Maryland 2016 CEQ #20150353

Dear Ms. Fishbourne:

In accordance with Section 102(2) (c) of the National Environmental Policy Act (NEPA), 42 U.S.C. § 4332(2) (c), Section 309 of the Clean Air Act, 42 U.S.C. § 7609, and the Council on Environmental Quality (CEQ) regulations, 40 CFR Parts 1500-1508, the U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) and the Section 4(f) evaluation for the Baltimore & Potomac Tunnel Project prepared by the Federal Railroad Administration (FRA).

As you are aware, the purpose of the proposed action is to address the structural and operational deficiencies of the existing Baltimore & Potomac Tunnel, improve passenger rail services, and support existing and future demands along the Northeast Corridor. The alternatives considered in the DEIS include four alternatives, one No-Build and three Build Alternatives – 3A, 3B, 3C, respectively. The No-Build Alternative would include the continued use of the existing tunnel with no significant improvements other than routine maintenance. The existing 143 year old tunnel is actually a series of a three tunnels (Gilmor St. Tunnel, Wilson St. Tunnel and the John St Tunnel) with two day lighting sections. It travels north and south on the western side Baltimore City. The two-track tunnel system is one of the oldest structure along Amtrak's Northeast Corridor. The Build Alternatives, 3A, 3B and 3C would provide for a 4-tube tunnel system each ranging in length from 1.91 miles to 2.23 miles and traveling in a wide arch north of the existing tunnel. Each tunnel bore would be 20ft tall and 30ft wide.

The DEIS does not identify the selection of a Preferred Alternative; the Preferred Alternative will be identified in the Final EIS and/or Record of Decision (ROD) and will be based on how the Preferred Alternative meets Purpose and Need, an assessment of the rail operations, engineering transportation, cost, construction, an assessment of all the environmental impacts, and on public and agency comments received. Since a Preferred Alternative was not selected in the DEIS, EPA has reviewed and rated each of the build alternatives. EPA has rated each of the alternatives an EC-2 (Environmental Concerns/Insufficient Information), according to the EPA rating system described on the website: www.epa.gov/compliance/nepa/comments/ratings.html. These ratings are based on some deficiencies and area of concerns including Climate Change, Environmental Justice, noise and vibration, cultural resources, air quality, hazard material management, and Children's Environmental Health. EPA requests additional information in the Final EIS on alternative locations for ventilation plants, construction staging areas, sediment and erosion control during construction, potential added diesel emissions from the MARC and freight trains, and disclosure of emergency planning. EPA recognizes efforts made to evaluate and address community concerns and impacts and to coordinate this project with the community. The DEIS includes several environmental commitments, for example limiting hours of construction and implementing a rodent control program. These should be memorialized in the Final EIS and Record of Decision (ROD). While the DEIS includes several environmental commitments, there still remains a great deal of information that should be shared with the public, including final information regarding noise, vibration, utility disruptions, providing pre-construction building inspections, and emergency planning. EPA suggests that FRA consider the best way to share information, some of which may not yet be available, with the public after the completion of the ROD. EPA recommends alternatives to minimize loss of community cohesion, quality of life and historic locations, including in the siting of ventilation plants. The basis of EPA's ratings are detailed in the enclosed Technical Comments document.

Thank you for the opportunity to review this project. If you have questions regarding these comments, the staff contact for this project is Mr. Kevin Magerr; he can be reached at 215-814-5724 or Magerr.kevin@epa.gov

Sincerely,

Barbara Rudnick
NEPA Team Leader
Office of Environmental Programs

Technical Comments for the DEIS & Section 4(f) Evaluation – Baltimore & Potomac Tunnel Project

General Comments

1. Page 239, the construction of the tunnel (Alternatives 3A, 3B, 3C) would involve horizontal mining (1.91-2.23 miles), trench cutting and fill construction technique for the portal sections. It is anticipated that the construction activity will create a significant amount of construction debris and excavation spoils. The Final EIS should provide an estimate of this material, how it will be managed and the location of the ultimate disposal.

2. The DEIS does not provide any information on the location, size and the potential impacts of the construction lay-down and staging areas. This information should be included in the Final EIS.

3. All three Build Alternatives will require three ventilation plants. Two of the plants are located at either end of the tunnel (north and south portal) and integrated into the tunnel portal construction. However the third tunnel (Intermediate Ventilation Plant) will require surface and subsurface disturbance to connect the ventilation shaft to the tunnel construction. The preferred intermediate ventilation plant would be located at the south side of the Brookfield Avenue and Whitelock Street intersection in the Reservoir Hill neighborhood. The Reservoir Hill neighborhood is a Historic District and is listed on the National Register. The site would displace the community garden and a community gathering and learning space. The community garden and the community gathering spaces are considered integral to the neighborhood character of Reservoir Hill by its residents. On Page 56 of the DEIS identifies additional alternative sites for the intermediate ventilation plant proposed by the public. EPA recommends that these alternatives be seriously considered; in particular, the Druid Hill Avenue between Whitelock Street and Clendenin Street site. This site consist of a block of abandon houses adjacent to an industrial facility. Further it is approximately the same distance to the tunnel alignment as the preferred third ventilation site.

4. The MARC commuter service is expected to replace existing electric locomotives with diesel powered locomotives by 2019. Based on operational projections, the total number of daily commuter train service using the tunnel would be 164 trains. It is unclear if the air quality analysis of this increase in diesel emissions was evaluated locally in the areas of the ventilation facilities on the community, particularly considering the most sensitive portion of the community: the elderly, health-impaired and young children.

5. For possible operational rail service delays, provisions should be made to include designating acceptable waiting locations, away from homes, schools, heavily-used parks, and waterways. If locomotives could be laying over in these locations for extended periods, authorities should consider furnishing "portable air" and generators to supply electric power to enable locomotives to shut down safely.

6. Because infrastructure and equipment is always subject to disuse and misuse, and operations can achieve or undermine efficiency, the FRA should execute binding agreements with the railroads and system operators that:

- Require use of idle reduction infrastructure where provided.
- Establish engine shutdown policy/protocol (based on duration of wait, season, onboard and trackside equipment, etc.).
- Designate waiting locations.

7. Greater details should be included in the Final EIS on the erosion and sediment controls during construction and the stormwater and groundwater control measures during tunnel operations.

Specific Comments

Climate Change

1. Page 129, the DEIS summarizes the December 2014 CEQ draft guidance (Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts). Although still a draft, it provides helpful general guidelines that, unfortunately, were not applied in the DEIS. It would be beneficial for the Final EIS to provide an analysis with details on how the agency considered the GHG emissions of each alternative. If warranted, the Final EIS would also benefit from including a qualitative description of relevant climate change impacts, an analysis of emissions from reasonable alternatives and/or practicable mitigation measures to reduce project-related GHG emissions. It is recommended that the "Affected Environment" section of the EIS include a summary discussion of climate change and ongoing and reasonably foreseeable climate change impacts relevant to the project and project area, based on U.S. Global Change Research Program (http://www.globalchange.gov) assessments. This will assist in identifying potential project impacts or other factors that may be exacerbated by climate change and inform consideration of measures to adapt to climate change impacts. (Among other things, this will assist in identifying resilience-related changes to the proposal and provide background for the reader and decision-maker on data that might be used in resilience design).

2. Page 156, the DEIS lists as one of several bullets that the project design would result in a "cost avoided" based on Climate Change resiliency. Nothing further is said, including no detail on design considerations to accommodate climate change resiliency. The Final EIS would benefit from the inclusion of details on how the project design incorporates concepts of resiliency from the effects of climate change, data that was used to assist in design, and considerations that were made in design alternatives.

3. Page 157, the DEIS discusses the benefits of three action alternatives in removing a chokepoint from the NEC and moving commuters from reliance on automobiles to more energy-efficient train use. However, the DEIS makes no connection between these benefits and GHG emission reductions. The FEIS would be far stronger if it analyzed and compared among alternatives the annual CO_{2e} tons that FRA actions might save.

Environmental Justice

1. The goal of the Environmental Justice (EJ) assessment is to identify areas of potential EJ concern using objective, clearly-definable methodology, to identify the potential adverse impacts associated with the project, mitigations for those impacts, and other relevant data that may help to better define the situation from an EJ perspective in a comprehensive and coherent manner. EPA is concerned that environmental justice issues may not have been adequately addressed, that additional documentation of impacts on populations of EJ concern may be needed, and that there may be impacts to populations of concern. Comprehensive steps should be taken to assure early, frequent and appropriate engagement of the community in the decision-making process.

2. The low income benchmark may be inaccurate. Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect. The approach to determine the appropriate benchmarks include:

- Apply the 50% test (all areas that are more than 50% are areas of EJ concern. Benchmark value should be compared to the state or county average)
- If the percent minority population is greater than the state or county average, then this would equal the Area of Potential EJ concern; OR
- Set a benchmark that exceeds the state or county average by a given percentage (*e.g.,* taking 110% of the state or county average).

3. The Study Area currently contains six publicly-owned housing developments, with a total of 2,467 units, dispersed throughout the Study Area. There are also 22 affordable housing apartment developments with a total of 3,111 units. The Final EIS should include the percentage of publicly owned housing developments and affordable housing developments impacted in the City of Baltimore.

4. As stated in page 176, "Executive Order 12898 requires federal agencies ensure effective, meaningful involvement of low-income and minority populations in project planning and development and potentially affected EJ populations have fair and equal access to information." The Final EIS should include a listing of low-income and minority community organizations or representatives engaged in the project and dates of involvement.

Noise and Vibration

1. The impacts from noise and vibration appear to be significant, as stated on page 234 and elsewhere. The exceedances of FTA frequent impact criteria for Noise and Vibration include:

- Alternative 3A - Noise 215 residences, Vibrations 69 residences
- Alternative 3B – Noise 303 residences, Vibration 138 residences
- Alternative 3C – Noise 265 residences, Vibration 92 residences

2. It is unclear in the DEIS what the impacts of noise and vibration are during construction, how the communities will be informed and what mitigation measures will be implemented.

3. EPA suggest the following noise and vibration preventative and mitigation measures:

- Where practicable, schedule individual project construction activities to avoid or minimize adverse impacts. Consider using noise barriers, including temporary barriers, semi-permanent barriers, noise curtains, and/or noise tents. Consider using vibration reducing techniques or mitigation measures.
- Coordinate construction activities with projects under construction in adjacent and nearby locations to avoid or minimize impacts.
- Consider condition of surrounding buildings, structures, infrastructure, and utilities, where appropriate. Consider whether any special protection is needed for historic properties.
- Prepare contingency measures in the event established limits are exceeded. Consider steps to avoid generating noise/vibration from cumulative operations that may exceed noise limits.
- Consider establishing a public communication plan in order to keep the public informed and attempt to reduce public frustration. This plan could include regular public meetings, emails, a hotline, and other notices.
- Consider whether a noise technician/acoustical engineer is needed during peak construction phases.
- Consider restricting the use of certain types of equipment during noise/vibration-sensitive hours. Consider restricting night work all together.

Cultural Resources

1. Page ES 6, Table 2: Summary of Potential Engineering and Environmental Impacts provides a clear and concise summary of the impacts for the action alternatives (3A, 3B, 3C) and the No-build Alternative. It is evident from this chart and the Cultural Resources sections of the DEIS that of the build alternatives, Alternative 3A is the alternative with the least cultural resources/Section 4(f) properties impact (as well as environmental and community impacts) in comparison with the other two action alternatives (3B and 3C) as summarized below.

	Alternative 3A	Alternative 3B	Alternative 3C
Adverse Effects for Historic Properties	6 (6 contributing historic elements impacted)	8 (87 contributing historic elements impacted)	10 (132 contributing historic elements impacted)
Area of Surface Disturbance within	12.0 acres	12.0 acres	20.3 acres

Historic District			
Use of Section 4(f) Properties	5 properties	11 properties	10properties

2. Page ES-15 (3. Section 4(f) Properties) and pages 183-194 (Chapter 6), discuss specific impacts to the Section 4(f) properties. In particular, ***Alternative 3A*** would result in potential use of five (**5**) Section 4(f) properties requiring the demolition of three (**3**) historic buildings which are contributing elements to the Midtown Edmondson Historic District. ***Alternative 3B*** would result in the use of eleven (**11**) properties qualifying for Section 4(f) requiring demolition of **82** historic buildings or other contributing elements to the Midtown Edmonson Historic District. In addition, construction of the south portal would require demolition of five (**5**) historic buildings or other contributing elements to the Greater Rosemont Historic District. ***Alternative 3C*** would result in the potential use of ten (**10**) Section 4(f) properties. In addition, this would result in the demolition of seven (**7**) historic buildings or other contributing elements to the Midtown Edmondson Historic District, **31** historic buildings or other contributing elements to the Greater Rosemont Historic District and **28** historic buildings or other elements contributing to the Edmondson Avenue Historic District. As is evident, the specific impacts discussed within each alternative is far greater (at least for Alternative 3B and 3C) than the total number of Section 4(f) properties impacted for each alternative (Alternative 3A – 5 properties, Alternative 3B – 11, Alternative 3C – 10); Specific impacts (Alternative 3A – 3, Alternative 3B – 87, Alternative 3C – 66). It is not clear if there is overlap of effects for Historic Properties and Section 4(f) properties or if these impacts are distinctly separate. Although it is obvious that impacts to both Historic Properties and Section 4(f) is significant and adverse (for all action alternatives) this should be made clear in the Final EIS. Table 2 should include the total number of individual impacts within each Section 4(f) property (as shown below) for each action alternative as was done for "adverse effects for historic properties."

	Alternative 3A	Alternative 3B	Alternative 3C
Use of Section 4(f) Properties	5 (3 individual impacts)	11 (87 individual Impacts	10 (66 individual impacts)

3. Page 179 (Chapter 6) references the *Architectural Historic Properties Effects Assessment Report* which provides details of individual historical property effects. This document was not included as part of the Appendix. EPA recommends that this document be available for public review and be made part of the Final EIS documentation.

Air Quality

1. In an effort to attain and maintain National Ambient Air Quality Standards the FRA should control or minimize construction emissions through use of the following typical Best Management Practice (BMPs) in association construction:

- Utilize appropriate dust suppression methods during on-site construction activities. Available methods include application of water, surfactants, soil stabilizers, or vegetation; use of enclosures, covers, silt fences, or wheel washers; and suspension of earth-movement activities during high wind conditions. Consider implementing a dust control program.

- Maintain a speed of less than 15 mph with construction equipment on unpaved surfaces as well as utilize ultra-low sulfur diesel (ULSD) fuel in off-road construction equipment with an engine horsepower (HP) rating of 50 HP or above fuel with lower sulfur content.

- Employ a construction management plan in order to minimize interference with regular motor vehicle traffic.

- Use electricity from power poles instead of generators whenever possible.

- Repair and service construction equipment according to the regular maintenance schedule recommended for each individual equipment type.

- Use low-VOC architectural materials and supplies equipment.

- Incorporate energy-efficient supplies whenever feasible.

- Consider whether a PM-10 or PM-2.5 monitoring program should be utilized.

- Use diesel engine retrofit technology in off-road equipment to further reduce emissions. Such technology may include diesel oxidation catalyst/ diesel particulate filter (DOC/DPF), engine upgrades, engine replacements, or combinations of these strategies.

- Limit unnecessary idling times on diesel-powered engines to three minutes.

- Locate diesel-powered exhausts away from fresh air intakes.

- Control dust related to the construction site through a Construction Environmental Protection Program (CEPP), including a Soil Erosion and Sediment Control Plan that includes, among other things, spraying of a suppressing agent (nonhazardous, biodegradable) on dust piles, containing fugitive dust, and adjusting construction activities to respond to meteorological conditions, as appropriate.

2. The build alternatives tunnel dimensions would provide access for larger freight trains including Plate H freight cars. This would facilitate freight access between the southwest and the northeast portions of the Port of Baltimore. The existing tunnel limits freight access to two freight trains per day. Since the build alternatives will provide increased freight capacity, the FEIS should estimate increased freight traffic through the proposed tunnel and potential localized air quality impacts.

Hazardous Materials Management

1. The potential number of hazardous material sites ranges from 92 to 153 sites along alternative alignments and may include dry cleaners, rail maintenance, gas station and automotive repairs. As a precautionary measure, the tunnel project should include a hazardous material contingency plan that would address how to properly remove, handle and dispose of any hazardous material that may be encountered and or related to the construction activity.

2. As stated on page 82, cargos to/from specific railroad customers of the freight trains that pass through the B&P Tunnel include vegetable oil; plastic pellets; paper; lumber; and produce. However, there are no regulations or restrictions which would preclude other forms of freight cargo on these trains, providing the material is moved in accordance with federal transportation rules. There is concern that the potential material could include hazardous materials. We recommend that emergency contingency plans in place to address potential spills or other accidents as a result of carrying these materials be disclosed to the public through the NEPA process or communicated to the public in the future.

Children's Environmental Health

Executive Order 13045 on Children's Health and Safety directs that each Federal agency shall make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, and shall ensure that its policies, programs, activities, and standards address these risks. Analysis and disclosure of these potential effects under NEPA is necessary because some physiological and behavioral traits of children render them more susceptible and vulnerable than adults to health and safety risks. Children may be more vulnerable to the toxic effects of contaminants because their bodies and systems are not fully developed and their growing organs are more easily harmed. Although the DEIS identifies communities and public schools located near the proposed project area, the DEIS does not clearly describe the potential direct, indirect, and cumulative impacts of the project on children's health.

1. Children's Environmental Health does not appear to have been included in the DEIS. The FRA Executive Order 13045 for the Protection of Children from Environmental Health Risks and Safety Risks. Without analysis or documentation on this topic, it cannot be assumed that there is no potential risk associated with the proposed project that may adversely affect children's health.

2. EPA recommends that the EIS include an evaluation of potential direct, indirect and cumulative health impacts of the project that may have a disproportionate effect on children's health. This may include evaluating the excavated soil lead levels, and additional consideration to dust reductions and stockpile stabilization techniques. We also suggest evaluating noise and vibration impacts associated with the project specific to children. Consider evaluating potential impacts associated with pest/rodent extermination specific to children.

Appendix C

B&P TUNNEL PROJECT

List of Project Technical Reports and Documents

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department
of Transportation

Technical Reports and Supporting Documents

Technical Reports and Supporting Documents are available on the project website: www.bptunnel.com

Alternatives Report
Prepared by: RK&K October 2015

Architectural Historic Properties Effects Assessment Report
Prepared by: RK&K October 2015

Architectural Historic Properties Survey
Prepared by: Dovetail Cultural Resource Group and RK&K October 2015

Architectural Historic Properties Survey, Twelve Maryland Historical Trust Determination of Eligibility Forms Addendum
Prepared by: Dovetail Cultural Resource Group and RK&K September 2015

DEIS Air Quality Technical Report
Prepared by: KB Environmental Sciences, Inc. August 2015

FEIS Air Quality Technical Report
Prepared by: KB Environmental Sciences, Inc. June 2016

FEIS Noise Technical Report
Prepared by: KB Environmental Sciences, Inc. June 2016

FEIS Vibration Technical Report
Prepared by: AECOM June 2016

Hazardous Materials Assessment
Prepared by: RK&K August 2015

Natural Resources Technical Report
Prepared by: RK&K August 2015

Noise and Air Quality Technical Memorandum for Ventilation Plants
Prepared by: KB Environmental Sciences, Inc. October 2015

Noise Technical Report
Prepared by: KB Environmental Sciences, Inc. June 2015

Phase IA Archeological Study
Prepared by: RK&K October 2015

Preliminary Alternatives Screening Report
Prepared by: RK&K December 2014

Project Scoping Report
Prepared by: RK&K October 2015

Section 106 Update Technical Memorandum
Prepared by: RK&K July 2016

Vibration Technical Report
Prepared by: AECOM August 2015

Appendix D

Table of Minority Race and/or Ethnicity and Low Income Populations and Potential Environmental Justice Block Groups

Table 1: Minority Race and/or Ethnicity and Low Income Populations and Potential Environmental Justice Block Groups

Geography/ Block Groups	Total Population	White Alone	Black or African American Alone	Asian Alone	American Indian and Alaska Native Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino	Total Minority	Minority (Percent)	Potential EJ Area (based on Minority)	Total Households	Total Low-Income Households	Low-income Household (Percent)	Potential EJ Area (based on Low-Income)
Maryland	5,834,299	3,406,243	1,717,582	332,620	17,535	2,570	195,644	162,105	493,310	2,921,366	50.10	n/a	2,146,240	558,329	9.80	n/a
Baltimore City	621,445	174,590	389,758	14,822	1,563	178	1,362	12,400	26,772	446,855	71.90	n/a	241,455	142,162	23.80	n/a
Study Area Block Groups	65,762	8,400	53,407	1,515	82	34	163	1,317	844	57,362	87.20	n/a	26,358	241	68.50	n/a
1001 002	541	23	485	0	0	0	0	32	1	518	95.70	Yes	352	200	14.60	Yes
1101 001	2612	1658	661	165	0	0	0	43	85	954	36.50	No	1370	438	32.10	No
1102 001	1892	998	400	259	0	15	0	49	171	894	47.30	No	1366	62	34.10	Yes
1204 001	600	46	524	0	0	0	0	15	15	554	92.30	Yes	182	136	42.00	Yes
1205 001	861	144	576	0	0	11	26	48	56	717	83.30	Yes	324	171	29.10	Yes
1205 002	1212	395	724	47	0	0	0	31	15	817	67.40	Yes	588	468	72.70	No
1206 003	733	147	479	98	9	0	0	0	0	586	79.90	Yes	644	67	19.10	Yes
1207 003	978	518	346	45	0	0	0	53	16	460	47.00	No	350	17	6.90	No
1301 001	584	87	489	0	0	0	0	0	8	497	85.10	Yes	246	227	56.60	No
1301 002	638	41	450	9	0	0	0	138	0	597	93.60	Yes	401	113	22.00	Yes
1301 003	1087	47	1026	2	0	0	0	10	2	1040	95.70	Yes	514	60	18.30	No
1301 004	579	25	544	0	0	0	0	10	0	554	95.70	Yes	328	89	24.80	No
1302 001	846	161	572	20	0	0	0	22	71	685	81.00	Yes	359	188	42.00	No
1302 002	1516	153	1250	0	23	0	0	90	0	1363	89.90	Yes	448	72	24.80	Yes
1302 003	699	81	572	23	0	0	23	0	0	618	88.40	Yes	290	10	6.20	No
1302 004	454	38	401	0	0	0	0	15	0	416	91.60	Yes	162	74	23.50	No
1303 001	613	55	549	0	9	0	0	0	0	558	91.00	Yes	315	45	22.00	No
1303 002	515	0	503	0	0	0	0	0	12	515	100.00	Yes	205	147	47.90	No
1303 003	674	0	657	0	0	0	0	7	10	674	100.00	Yes	307	62	22.50	Yes
1304 001	903	22	879	0	0	0	0	0	2	881	97.60	Yes	276	68	25.50	No
1304 002	884	0	869	0	0	0	0	15	0	884	100.00	Yes	267	80	31.10	No
1304 003	457	12	445	0	0	0	0	0	0	445	97.40	Yes	257	127	25.10	No
1401 001	1146	500	188	393	0	0	0	57	8	646	56.40	Yes	505	71	16.00	No
1401 002	1226	807	160	146	0	0	0	43	70	419	34.20	No	443	214	39.90	No
1401 003	1063	274	728	39	0	0	0	22	0	789	74.20	Yes	536	112	12.40	Yes
1401 004	1571	777	547	158	0	0	0	89	0	794	50.50	Yes	900	192	70.80	No
1402 001	646	70	543	0	0	0	0	0	33	576	89.20	Yes	271	86	36.00	Yes
1402 002	566	17	549	0	0	0	0	0	0	549	97.00	Yes	239	75	70.80	Yes

Geography/ Block Groups	Total Population	White Alone	Black or African American Alone	Asian Alone	American Indian and Alaska Native Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino	Total Minority	Minority (Percent)	Potential EJ Area (based on Minority)	Total Households	Total Low-Income Households	Low-income Household (Percent)	Potential EJ Area (based on Low-Income)
1402 003	433	9	424	0	0	0	0	0	0	424	97.90	Yes	106	216	63.20	Yes
1402 004	1147	0	1147	0	0	0	0	0	0	1147	100.00	Yes	342	142	68.60	Yes
1403 001	355	10	345	0	0	0	0	0	0	345	97.20	Yes	207	29	14.50	Yes
1403 002	561	0	561	0	0	0	0	0	0	561	100.00	Yes	200	93	36.90	No
1403 003	646	74	538	10	0	0	0	0	24	572	88.50	Yes	252	123	43.30	Yes
1403 004	807	0	732	48	0	0	0	27	0	807	100.00	Yes	284	68	28.50	Yes
1501 001	778	0	778	0	0	0	0	0	0	778	100.00	Yes	239	203	51.70	No
1501 002	1072	0	1072	0	0	0	0	0	0	1072	100.00	Yes	393	191	37.30	Yes
1501 003	1694	5	1672	0	0	0	0	17	0	1689	99.70	Yes	512	83	22.20	Yes
1502 001	1352	0	1352	0	0	0	0	0	0	1352	100.00	Yes	374	64	33.90	No
1502 002	719	0	700	0	0	0	0	19	0	719	100.00	Yes	189	65	23.30	Yes
1502 003	689	0	681	0	0	0	0	8	0	689	100.00	Yes	279	41	15.00	No
1503 001	828	0	828	0	0	0	0	0	0	828	100.00	Yes	273	57	17.90	No
1503 002	923	0	923	0	0	0	0	0	0	923	100.00	Yes	319	90	50.30	No
1503 003	610	0	483	0	0	0	0	127	0	610	100.00	Yes	179	53	19.40	Yes
1504 001	685	0	671	0	0	0	0	14	0	685	100.00	Yes	273	101	30.20	No
1504 002	1086	0	1077	0	0	0	0	0	9	1086	100.00	Yes	334	43	24.60	No
1601 001	468	0	406	0	0	0	0	0	62	468	100.00	Yes	175	70	31.70	No
1601 002	613	5	585	7	0	0	0	16	0	608	99.20	Yes	221	227	53.40	Yes
1601 003	757	1	661	0	20	0	67	7	1	756	99.90	Yes	425	75	28.50	Yes
1601 004	584	0	584	0	0	0	0	0	0	584	100.00	Yes	263	22	7.60	No
1602 001	770	0	770	0	0	0	0	0	0	770	100.00	Yes	290	123	42.40	No
1602 002	635	7	609	19	0	0	0	0	0	628	98.90	Yes	290	146	39.90	Yes
1602 003	1204	0	1204	0	0	0	0	0	0	1204	100.00	Yes	366	23	10.40	Yes
1603 001	950	31	904	3	4	8	0	0	0	919	96.70	Yes	221	99	35.90	No
1603 002	704	28	676	0	0	0	0	0	0	676	96.00	Yes	276	34	21.80	Yes
1604 001	496	0	496	0	0	0	0	0	0	496	100.00	Yes	156	117	36.70	No
1604 002	1490	2	1470	0	0	0	18	0	0	1488	99.90	Yes	319	40	25.30	Yes
1604 003	539	0	539	0	0	0	0	0	0	539	100.00	Yes	158	86	43.70	No
1604 004	692	0	692	0	0	0	0	0	0	692	100.00	Yes	197	74	20.10	Yes
1605 001	759	0	759	0	0	0	0	0	0	759	100.00	Yes	369	24	17.10	No
1605 002	336	0	336	0	0	0	0	0	0	336	100.00	Yes	140	146	54.50	No
1605 003	931	0	931	0	0	0	0	0	0	931	100.00	Yes	268	45	16.30	Yes
1605 004	730	0	606	0	0	0	0	0	124	730	100.00	Yes	276	56	16.70	No
1605 005	949	0	949	0	0	0	0	0	0	949	100.00	Yes	335	634	74.90	No
1702 001	1842	5	1772	0	0	0	0	56	9	1837	99.70	Yes	847	145	37.10	Yes

Geography/ Block Groups	Total Population	White Alone	Black or African American Alone	Asian Alone	American Indian and Alaska Native Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino	Total Minority	Minority (Percent)	Potential EJ Area (based on Minority)	Total Households	Total Low-Income Households	Low-income Household (Percent)	Potential EJ Area (based on Low-Income)
1702 002	1214	53	1116	11	0	0	0	9	25	1161	95.60	Yes	391	112	40.40	Yes
1702 003	430	27	364	0	0	0	29	10	0	403	93.70	Yes	277	139	39.70	Yes
1703 001	793	0	785	0	0	0	0	8	0	793	100.00	Yes	350	114	26.60	Yes
1703 002	1215	13	1172	0	0	0	0	30	0	1202	98.90	Yes	429	82	30.90	No
2001 001	811	13	798	0	0	0	0	0	0	798	98.40	Yes	265	39	16.40	No
2001 002	656	14	602	0	10	0	0	23	7	642	97.90	Yes	238	56	32.60	No
2002 001	462	42	395	0	0	0	0	25	0	420	90.90	Yes	172	16	14.20	Yes
2002 002	249	0	249	0	0	0	0	0	0	249	100.00	Yes	113	80	47.30	No
2002 003	441	0	441	0	0	0	0	0	0	441	100.00	Yes	169	40	30.30	Yes
2002 004	249	0	249	0	0	0	0	0	0	249	100.00	Yes	132	55	23.10	No
2002 005	727	7	702	0	0	0	0	18	0	720	99.00	Yes	238	183	39.70	No
2004 002	1317	67	1225	0	7	0	0	10	8	1250	94.90	Yes	461	136	41.10	Yes
2006 001	1268	891	260	13	0	0	0	104	0	377	29.70	Yes	331	241	68.50	Yes

Source: 2013 American Community Survey- 5-Year Estimate, 2009-2013
Notes:
Race Alone categories do not include Hispanic or Latino population.
Hispanic or Latino persons may identify as any race.
Two or more races does not include persons who identify as Hispanic or Latino.
Total Minority persons includes all persons who identify as non-White, non-Hispanic or Latino, plus all persons who identify as Hispanic or Latino, regardless of race.

Appendix E

Socioeconomic Data Tables

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation

Table 1: Population Summary

Geographical Area	Population		Geographical Area	Population	
Census Tract-Block Group	**Total**	**Percentage within Study Area**	**Census Tract-Block Group**	**Total**	**Percentage within Study Area**
1001-2	541	0.8%	1502-3	689	1.1%
1101-1	2,612	4.0%	1503-1	828	1.3%
1102-1	1,892	2.9%	1503-2	923	1.4%
1204-1	600	0.9%	1503-3	610	0.9%
1205-1	861	1.3%	1504-1	685	1.1%
1205-2	1,212	1.9%	1504-2	1,086	1.7%
1206-3	733	1.1%	1601-1	468	0.7%
1207-3	978	1.5%	1601-2	613	0.9%
1301-1	584	0.9%	1601-3	757	1.2%
1301-2	638	1.0%	1601-4	584	0.9%
1301-3	1,087	1.7%	1602-1	770	1.2%
1301-4	579	0.9%	1602-2	635	1.0%
1302-1	846	1.3%	1602-3	1,204	1.9%
1302-2	1,516	2.3%	1603-1	950	1.5%
1302-3	699	1.1%	1603-2	704	1.1%
1302-4	454	0.7%	1604-1	496	0.8%
1303-1	613	0.9%	1604-2	1,490	2.3%
1303-2	515	0.8%	1604-3	539	0.8%
1303-3	674	1.0%	1604-4	692	1.1%
1304-1	903	1.4%	1605-1	759	1.2%
1304-2	884	1.4%	1605-2	336	0.5%
1304-3	457	0.7%	1605-3	931	1.4%
1401-1	1,146	1.8%	1605-4	730	1.1%
1401-2	1,226	1.9%	1605-5	945	1.5%
1401-3	1,063	1.6%	1702-1	1,842	2.8%
1401-4	1,571	2.4%	1702-2	1,214	1.9%
1402-1	646	1.0%	1702-3	430	0.7%
1402-2	566	0.9%	1703-1	793	1.2%
1402-3	433	0.7%	1703-2	1,215	1.9%

Geographical Area	Population		Geographical Area	Population	
1402-4	1,147	1.8%	2001-1	811	1.3%
1403-1	355	0.5%	2001-2	656	1.0%
1403-2	561	0.9%	2002-1	462	0.7%
1403-3	646	1.0%	2002-2	249	0.4%
1403-4	807	1.2%	2002-3	441	0.7%
1501-1	778	1.2%	2002-4	249	0.4%
1501-2	1,072	1.7%	2002-5	727	1.1%
1501-3	1,694	2.6%	2004-2	1,317	2.0%
1502-1	778	1.2%	2006-1	1,268	2.0%
1502-2	719	1.1%			
STUDY AREA				**80,045**	**100**
Maryland				5,834,299	N/A
Baltimore City				621,445	N/A

Source: U.S. Census Bureau, 2009-2013 5-Year American Community Survey

Table 2: Racial Composition by Block Group

Census Tract-Block Group	White Alone (%)	African American or Black Alone (%)	Asian Alone (%)	Other Alone (%)	Two or More Races (%)	Hispanic (%)
1001-2	4.3	89.6	0.0	0.2	5.9	0.2
1101-1	65.4	26.4	6.3	0.0	1.9	3.3
1102-1	54.9	21.1	13.7	0.8	4.0	9.0
1204-1	7.7	89.8	0.0	0.0	2.5	2.5
1205-1	20.2	67.2	0.0	1.3	5.6	6.5
1205-2	33.8	59.7	3.9	0.0	2.6	1.2
1206-3	20.1	65.3	13.4	1.2	0.0	0.0
1207-3	54.6	35.4	4.6	0.0	5.4	1.6
1301-1	14.9	83.7	0.0	0.0	1.4	1.4
1301-2	6.4	70.5	1.4	0.0	21.6	0.0
1301-3	4.3	94.5	0.2	0.0	1.0	0.2
1301-4	4.3	94.0	0.0	0.0	1.7	0.0
1302-1	19	67.6	2.4	0.0	2.6	8.4
1302-2	10.1	82.5	0.0	1.5	5.9	0.0
1302-3	11.6	81.8	3.3	0.0	0.0	0.0
1302-4	8.4	88.3	0.0	0.0	3.3	0.0
1303-1	9	89.6	0.0	1.5	0.0	0.0
1303-2	2.3	97.7	0.0	0.0	0.0	2.3
1303-3	0	99.0	0.0	0.0	1.0	1.5
1304-1	2.7	97.3	0.0	0.0	0.0	0.2
1304-2	0	98.3	0.0	0.0	1.7	0.0
1304-3	2.6	97.4	0.0	0.0	0.0	0.0
1401-1	43.6	17.1	34.3	0.0	5.0	0.7
1401-2	69.6	13.6	11.9	0.0	4.9	5.7

Census Tract-Block Group	White Alone (%)	African American or Black Alone (%)	Asian Alone (%)	Other Alone (%)	Two or More Races (%)	Hispanic (%)
1401-3	25.8	68.5	3.7	0.0	2.1	0.0
1401-4	49.5	34.8	10.1	0.0	5.7	0.0
1402-1	15.9	84.1	0.0	0.0	0.0	5.1
1402-2	3	97.0	0.0	0.0	0.0	0.0
1402-3	2.1	97.9	0.0	0.0	0.0	0.0
1402-4	0	100.0	0.0	0.0	0.0	0.0
1403-1	2.8	97.2	0.0	0.0	0.0	0.0
1403-2	0	100.0	0.0	0.0	0.0	0.0
1403-3	15.2	83.3	1.5	0.0	0.0	3.7
1403-4	0	90.7	5.9	0.0	3.3	0.0
1501-1	0	100.0	0.0	0.0	0.0	0.0
1501-2	0	100.0	0.0	0.0	0.0	0.0
1501-3	0.3	98.7	0.0	0.0	1.0	0.0
1502-1	0	100.0	0.0	0.0	0.0	0.0
1502-2	0	97.4	0.0	0.0	2.6	0.0
1502-3	0	98.8	0.0	0.0	1.2	0.0
1503-1	0	100.0	0.0	0.0	0.0	0.0
1503-2	0	100.0	0.0	0.0	0.0	0.0
1503-3	0	79.2	0.0	0.0	20.8	0.0
1504-1	0	98.0	0.0	0.0	2.0	0.0
1504-2	0	100.0	0.0	0.0	0.0	0.8
1601-1	0	100.0	0.0	0.0	0.0	13.2
1601-2	0.8	95.4	1.1	0.0	2.6	0.0
1601-3	0.1	87.3	0.0	2.6	0.9	0.1
1601-4	0	100.0	0.0	0.0	0.0	0.0

Census Tract-Block Group	White Alone (%)	African American or Black Alone (%)	Asian Alone (%)	Other Alone (%)	Two or More Races (%)	Hispanic (%)
1602-1	0	100.0	0.0	0.0	0.0	0.0
1602-2	1.1	95.9	3.0	0.0	0.0	0.0
1602-3	0	100.0	0.0	0.0	0.0	0.0
1603-1	3.3	95.2	0.3	1.3	0.0	0.0
1603-2	4	96.0	0.0	0.0	0.0	0.0
1604-1	0	100.0	0.0	0.0	0.0	0.0
1604-2	0.1	98.7	0.0	0.0	0.0	0.0
1604-3	0	100.0	0.0	0.0	0.0	0.0
1604-4	0	100.0	0.0	0.0	0.0	0.0
1605-1	0	100.0	0.0	0.0	0.0	0.0
1605-2	0	100.0	0.0	0.0	0.0	0.0
1605-3	0	100.0	0.0	0.0	0.0	0.0
1605-4	0	100.0	0.0	0.0	0.0	17.0
1605-5	0	100.0	0.0	0.0	0.0	0.0
1702-1	0.3	96.7	0.0	0.0	3.0	0.5
1702-2	4.4	94.0	0.9	0.0	0.7	2.1
1702-3	6.3	84.7	0.0	0.0	2.3	0.0
1703-1	0	99.0	0.0	0.0	1.0	0.0
1703-2	1.1	96.5	0.0	0.0	2.5	0.0
2001-1	1.6	98.4	0.0	0.0	0.0	0.0
2001-2	3.2	91.8	0.0	1.5	3.5	1.1
2002-1	9.1	85.5	0.0	0.0	5.4	0.0
2002-2	0	100.0	0.0	0.0	0.0	0.0
2002-3	0	100.0	0.0	0.0	0.0	0.0
2002-4	0	100.0	0.0	0.0	0.0	0.0

Census Tract-Block Group	White Alone (%)	African American or Black Alone (%)	Asian Alone (%)	Other Alone (%)	Two or More Races (%)	Hispanic (%)
2002-5	1	96.6	0.0	0.0	2.5	0.0
2004-2	5.1	93.0	0.0	0.5	1.4	0.6
2006-1	70.3	20.5	1.0	0.0	8.2	0.0

Source: U.S. Census Bureau, 2009-2013 5-Year American Community Survey

Table 3: Limited English Speaking Status

Geography/ Block Groups	Households	Limited English Speaking Households	Percentage of Limited English Speaking Households
Maryland	2,146,240	66,425	3.09%
Baltimore City	241,455	5,274	2.18%
Study Area Block Groups	26,358	422	1.60%
1001-2	352	0	0.00%
1101-1	1,370	12	0.88%
1102-1	1,366	105	7.69%
1204-1	182	11	6.04%
1205-1	324	0	0.00%
1205-2	588	16	2.72%
1206-3	644	98	15.22%
1207-3	350	0	0.00%
1301-1	246	0	0.00%
1301-2	401	0	0.00%
1301-3	514	0	0.00%
1301-4	328	0	0.00%
1302-1	359	23	6.41%
1302-2	448	0	0.00%
1302-3	290	0	0.00%
1302-4	162	0	0.00%
1303-1	315	0	0.00%
1303-2	205	0	0.00%
1303-3	307	0	0.00%
1304-1	276	0	0.00%
1304-2	267	0	0.00%
1304-3	257	0	0.00%
1401-1	505	19	3.76%
1401-2	443	64	14.45%
1401-3	536	0	0.00%
1401-4	900	0	0.00%
1402-1	271	0	0.00%
1402-2	239	0	0.00%
1402-3	106	0	0.00%
1402-4	342	0	0.00%
1403-1	207	0	0.00%
1403-2	200	0	0.00%
1403-3	252	24	9.52%
1403-4	284	12	4.23%

Geography/ Block Groups	Households	Limited English Speaking Households	Percentage of Limited English Speaking Households
1501-1	239	0	0.00%
1501-2	393	0	0.00%
1501-3	512	0	0.00%
1502-1	374	0	0.00%
1502-2	189	0	0.00%
1502-3	279	0	0.00%
1503-1	273	0	0.00%
1503-2	319	0	0.00%
1503-3	179	0	0.00%
1504-1	273	0	0.00%
1504-2	334	0	0.00%
1601-1	175	0	0.00%
1601-2	221	0	0.00%
1601-3	425	0	0.00%
1601-4	263	0	0.00%
1602-1	290	0	0.00%
1602-2	290	9	3.10%
1602-3	366	19	5.19%
1603-1	221	0	0.00%
1603-2	276	0	0.00%
1604-1	156	0	0.00%
1604-2	319	0	0.00%
1604-3	158	0	0.00%
1604-4	197	0	0.00%
1605-1	369	0	0.00%
1605-2	140	0	0.00%
1605-3	268	0	0.00%
1605-4	276	0	0.00%
1605-5	335	0	0.00%
1702-1	847	0	0.00%
1702-2	391	0	0.00%
1702-3	277	0	0.00%
1703-1	350	4	1.14%
1703-2	429	6	1.40%
2001-1	265	0	0.00%
2001-2	238	0	0.00%
2002-1	172	0	0.00%
2002-2	113	0	0.00%
2002-3	169	0	0.00%

Geography/ Block Groups	Households	Limited English Speaking Households	Percentage of Limited English Speaking Households
2002-4	132	0	0.00%
2002-5	238	0	0.00%
2004-2	461	0	0.00%
2006-1	331	0	0.00%

Source: 2013 American Community Survey- 5-Year Estimate, 2009-2013

Note: A "limited English speaking household" is one in which no member 14 years old and over (1) speaks only English or (2) speaks a non-English language and speaks English "very well." In other words, all members 14 years old and over have at least some difficulty with English. By definition, English-only households cannot belong to this group. Previous Census Bureau data products have referred to these households as "linguistically isolated".

Table 4: Commuting Characteristics

Geography/ Block Groups	Commute Time					Commute Mode			
	Less than 15 minutes	15 to 24 minutes	25 to 34 minutes	35 to 44 minutes	45 minutes or more	Car, truck, or van	Public transportation (excluding taxicab)	Walked	Taxicab, motorcycle, bicycle, or other
Maryland	495,886 (18%)	711,985 (26%)	585,386 (21%)	245,374 (9%)	732,496 (26%)	2,413,682 (87%)	256,052 (9%)	68,435 (2%)	32,958 (1%)
Baltimore City	43,680 (17%)	82,250 (32%)	61,860 (24%)	16,430 (6%)	51,570 (20%)	185,598 (73%)	46,934 (18%)	17,377 (7%)	5,881 (2%)
Study Area Block Groups	4,009 (18%)	6,506 (30%)	4,644 (21%)	1,243 (6%)	5,542 (25%)	12,952 (59%)	6,780 (31%)	1,664 (8%)	548 (2%)
1001-2	55	25	10	19	12	57	64	0	0
1101-1	502	697	234	64	314	829	377	502	103
1102-1	270	447	181	73	216	749	176	141	121
1204-1	31	109	76	24	49	148	85	40	16
1205-1	71	130	71	3	41	184	78	43	11
1205-2	102	142	124	12	139	311	163	26	19
1206-3	57	22	30	0	56	121	23	10	11
1207-3	36	71	115	5	50	148	81	14	34
1301-1	29	50	105	0	34	129	32	57	0
1301-2	0	127	9	11	26	139	34	0	0
1301-3	13	50	108	27	88	189	91	5	1
1301-4	31	50	43	19	88	168	63	0	0
1302-1	121	168	13	12	27	258	44	0	39
1302-2	42	154	64	0	54	192	90	12	20
1302-3	77	123	123	24	29	345	19	12	0
1302-4	30	98	16	0	24	129	39	0	0
1303-1	120	78	47	0	68	248	51	10	4

Geography/ Block Groups	Commute Time					Commute Mode			
	Less than 15 minutes	15 to 24 minutes	25 to 34 minutes	35 to 44 minutes	45 minutes or more	Car, truck, or van	Public transportation (excluding taxicab)	Walked	Taxicab, motorcycle, bicycle, or other
1303-2	47	20	21	25	4	52	56	9	0
1303-3	42	24	50	17	97	90	140	0	0
1304-1	38	31	74	25	45	155	58	0	0
1304-2	10	105	110	22	31	146	120	12	0
1304-3	16	5	16	0	35	28	19	20	5
1401-1	279	73	125	0	57	276	117	101	40
1401-2	92	251	74	20	76	369	99	45	0
1401-3	113	81	30	57	77	314	44	0	0
1401-4	154	274	109	0	96	396	99	138	0
1402-1	32	0	77	0	61	94	76	0	0
1402-2	25	85	54	0	18	73	53	56	0
1402-3	22	0	8	0	33	30	33	0	0
1402-4	0	85	0	0	24	12	76	21	0
1403-1	9	11	20	0	47	46	35	6	0
1403-2	34	59	35	0	0	128	0	0	0
1403-3	83	34	93	0	30	146	73	11	10
1403-4	40	26	51	0	69	82	64	40	0
1501-1	54	71	59	0	193	203	150	0	24
1501-2	24	23	115	13	72	196	51	0	0
1501-3	65	96	66	0	171	147	251	0	0
1502-1	45	86	167	0	107	220	166	0	19
1502-2	28	30	82	24	66	52	160	18	0
1502-3	74	34	19	13	87	151	76	0	0
1503-1	0	26	60	36	161	193	90	0	0
1503-2	28	118	92	14	120	254	118	0	0
1503-3	0	58	43	44	54	117	82	0	0

Geography/ Block Groups	Commute Time					Commute Mode			
	Less than 15 minutes	15 to 24 minutes	25 to 34 minutes	35 to 44 minutes	45 minutes or more	Car, truck, or van	Public transportation (excluding taxicab)	Walked	Taxicab, motorcycle, bicycle, or other
1504-1	39	59	19	32	40	180	9	0	0
1504-2	11	49	64	41	54	179	40	0	0
1601-1	15	0	44	0	41	36	64	0	0
1601-2	5	117	0	7	81	83	127	0	0
1601-3	10	24	36	36	80	74	112	0	0
1601-4	101	50	15	0	69	127	102	6	0
1602-1	60	119	140	11	110	299	115	26	0
1602-2	9	68	61	29	69	168	54	14	0
1602-3	40	64	136	35	132	184	212	11	0
1603-1	72	30	15	35	71	192	31	0	0
1603-2	0	60	17	25	81	78	96	9	0
1604-1	11	43	70	53	80	83	130	44	0
1604-2	47	80	42	40	133	228	114	0	0
1604-3	0	90	18	22	60	102	88	0	0
1604-4	29	11	98	31	38	92	91	0	24
1605-1	21	134	48	0	79	240	42	0	0
1605-2	11	62	30	22	26	139	12	0	0
1605-3	0	11	16	58	78	87	76	0	0
1605-4	14	43	45	14	71	95	92	0	0
1605-5	31	46	94	28	132	256	75	0	0
1702-1	16	57	11	12	34	78	39	13	0
1702-2	12	71	43	0	154	99	170	11	0
1702-3	45	71	46	0	32	116	78	0	0
1703-1	45	40	57	0	88	132	98	0	0
1703-2	29	224	95	0	75	282	88	43	10
2001-1	34	67	17	46	115	135	138	6	0

Geography/ Block Groups	Commute Time					Commute Mode			
	Less than 15 minutes	15 to 24 minutes	25 to 34 minutes	35 to 44 minutes	45 minutes or more	Car, truck, or van	Public transportation (excluding taxicab)	Walked	Taxicab, motorcycle, bicycle, or other
2001-2	10	65	24	21	82	95	92	15	0
2002-1	41	88	56	5	8	141	32	25	0
2002-2	12	21	30	0	5	34	34	0	0
2002-3	44	88	54	0	11	39	114	44	0
2002-4	9	0	66	0	0	62	13	0	0
2002-5	21	64	56	0	162	143	160	0	0
2004-2	48	191	26	20	105	255	124	0	11
2006-1	176	52	36	17	0	105	102	48	26

Source: 2013 American Community Survey- 5-Year Estimate, 2009-2013

Table 5: 2013 Labor Force Characteristics and Median Household Income

Geographical Area	Population		Average Median Household Income (US Dollars)[1]	Geographical Area	Population		Average Median Household Income (US Dollars)[1]
Census Tract-Block Group	Residents in Labor Force	Unemployed Residents in Labor Force (%)		Census Tract-Block Group	Residents in Labor Force	Unemployed Residents in Labor Force (%)	
1001-2	164	12.2	9,755	1502-3	368	21.2	25,893
1101-1	1,778	7.3	47,500	1503-1	224	9.4	38,875
1102-1	1,348	10.8	39,516	1503-2	401	7.2	32,361
1204-1	374	9.9	43,500	1503-3	341	22.9	19,256
1205-1	373	23.1	30,323	1504-1	232	22.4	27,431
1205-2	853	15.0	31,012	1504-2	413	36.1	33,000
1206-3	254	29.9	9,136	1601-1	152	46.1	27,552
1207-3	344	22.4	37,813	1601-2	288	9.0	35,063
1301-1	374	12.8	37,500	1601-3	252	17.9	11,875
1301-2	161	8.1	11,127	1601-4	355	18.6	17,917
1301-3	335	38.2	30,887	1602-1	448	10.7	53,846
1301-4	284	3.2	26,250	1602-2	399	28.3	21,750
1302-1	468	4.9	53,583	1602-3	537	24.2	30,385
1302-2	280	19.6	26,014	1603-1	203	18.2	29,073
1302-3	397	14.4	55,208	1603-2	301	20.9	21,912
1302-4	320	26.9	57,813	1604-1	415	10.8	33,654
1303-1	452	3.3	47,950	1604-2	454	27.3	25,990
1303-2	266	4.1	21,904	1604-3	149	24.2	43,235
1303-3	344	29.7	18,438	1604-4	272	37.5	21,292
1304-1	326	31.3	43,553	1605-1	205	19.5	24,147
1304-2	356	39.3	35,446	1605-2	197	12.2	49,423
1304-3	143	42.7	27,917	1605-3	368	16.3	17,031
1401-1	816	10.7	78,365	1605-4	293	24.6	27,128
1401-2	610	4.1	33,583	1605-5	409	24.4	34,375
1401-3	409	4.4	15,991	1702-1	317	49.8	8,643
1401-4	655	0.0	43,553	1702-2	506	34.0	23,347
1402-1	326	39.3	12,446	1702-3	187	0.0	14,271

Geographical Area	Population		Average Median Household Income (US Dollars)[1]	Geographical Area	Population		Average Median Household Income (US Dollars)[1]
Census Tract-Block Group	Residents in Labor Force	Unemployed Residents in Labor Force (%)		Census Tract-Block Group	Residents in Labor Force	Unemployed Residents in Labor Force (%)	
1402-2	189	7.4	20,505	1703-1	361	34.1	21,196
1402-3	139	20.1	11,667	1703-2	573	32.3	38,542
1402-4	141	19.9	14,333	2001-1	521	26.1	30,710
1403-1	318	11.3	9,177	2001-2	450	13.1	32,500
1403-2	216	51.4	35,893	2002-1	196	18.4	44,643
1403-3	218	4.1	24,485	2002-2	50	20.0	22,250
1403-4	187	34.2	20,000	2002-3	193	15.0	25,074
1501-1	302	9.3	29,398	2002-4	129	19.4	17,031
1501-2	346	23.4	19,583	2002-5	407	12.5	25,948
1501-3	578	31.8	19,764	2004-2	623	29.1	33,322
1502-1	515	33.6	29,296	2006-1	540	28.1	34,519
1502-2	321	36.8	37,824				
STUDY AREA					**36,055**	**20.3**	**$29,474**
Maryland					**3,214,633**	**8.2**	**$73,538**
Baltimore City					**312,986**	**13.9**	**$41,385**

Source: US Census Bureau 2013. American Community Survey 2009-2013. Accessed March 2015 at http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_5YR_B19013&prodType=table

[1] *in 2013 inflation adjusted dollars.*

Table 6: Summary of Resident Occupations

Geographic Area/Census Tract-Block Group	Management, Business, Science, and Arts (%)	Service (%)	Sales and Office (%)	Natural Resources, Construction, and Maintenance (%)	Production, Transportation, and Material-Moving (%)
Maryland	44.2	16.9	23.2	7.9	7.7
Baltimore City	38.4	21.6	23.5	6.1	10.5
Study Area Total Block Groups	33.2	25.1	25.2	4.4	12.0
1001-2	21.5	33.1	8.3	0.0	37.2
1101-1	42.5	24.4	29.1	0.0	4.0
1102-1	79.5	10.0	6.6	1.2	2.8
1204-1	53.3	18.6	22.7	0.0	5.5
1205-1	43.1	28.1	6.4	12.8	9.5
1205-2	23.1	38.7	23.3	10.4	4.5
1206-3	18.2	40.6	6.7	20.6	13.9
1207-3	33.9	29.6	14.4	13.0	9.0
1301-1	38.1	26.1	11.0	0.0	24.8
1301-2	54.9	5.2	16.2	0.0	23.7
1301-3	41.2	30.9	21.2	0.0	6.8
1301-4	32.6	29.5	25.7	0.0	12.3
1302-1	44.8	22.2	25.2	0.0	7.8
1302-2	45.2	31.8	11.1	0.0	11.8
1302-3	22.1	26.6	27.1	0.0	24.2
1302-4	51.5	22.0	17.5	9.0	0.0
1303-1	46.8	35.6	17.4	0.0	0.3
1303-2	27.8	38.9	16.7	7.1	9.5
1303-3	11.7	49.1	38.3	0.0	0.9
1304-1	40.8	9.2	17.0	7.3	25.7
1304-2	25.5	18.3	39.9	4.3	11.9
1304-3	44.1	20.6	35.3	0.0	0.0
1401-1	59.2	8.8	30.3	1.6	0.0
1401-2	66.1	4.7	18.3	0.0	10.9
1401-3	67.5	15.7	5.6	0.0	11.2

Geographic Area/Census Tract-Block Group	Management, Business, Science, and Arts (%)	Service (%)	Sales and Office (%)	Natural Resources, Construction, and Maintenance (%)	Production, Transportation, and Material-Moving (%)
1401-4	82.2	5.3	10.0	0.0	2.5
1402-1	25.3	23.5	38.2	2.9	10.0
1402-2	40.1	24.2	19.2	0.0	16.5
1402-3	33.7	48.4	9.5	0.0	8.4
1402-4	19.3	33.0	0.0	24.8	22.9
1403-1	16.1	28.7	55.2	0.0	0.0
1403-2	11.7	28.3	16.6	26.2	17.2
1403-3	37.5	25.9	11.2	4.4	21.1
1403-4	38.9	11.1	15.2	0.0	34.8
1501-1	4.2	29.4	48.3	3.4	14.6
1501-2	9.5	38.0	26.2	20.8	5.4
1501-3	7.9	53.7	33.0	0.0	5.3
1502-1	17.8	45.3	16.6	5.1	15.2
1502-2	18.3	43.9	8.3	14.3	15.2
1502-3	15.7	28.8	29.2	11.0	15.3
1503-1	18.1	17.1	32.1	0.0	32.8
1503-2	25.9	26.4	30.2	0.0	17.5
1503-3	11.1	26.1	32.7	8.0	22.1
1504-1	15.3	4.8	46.0	28.6	5.3
1504-2	23.7	23.7	36.1	0.0	16.4
1601-1	50.8	49.2	0.0	0.0	0.0
1601-2	24.5	43.2	17.8	0.0	14.5
1601-3	37.4	49.2	8.0	0.5	4.8
1601-4	37.1	41.1	21.8	0.0	0.0
1602-1	19.8	25.2	29.4	4.0	21.6
1602-2	29.2	22.5	33.5	6.8	8.1
1602-3	4.9	39.6	33.4	8.6	13.5
1603-1	9.9	10.8	58.7	17.9	2.7
1603-2	20.8	41.2	13.0	15.3	9.7
1604-1	3.8	34.5	23.8	5.4	32.6
1604-2	8.5	39.2	28.1	3.5	20.8

Geographic Area/Census Tract-Block Group	Management, Business, Science, and Arts (%)	Service (%)	Sales and Office (%)	Natural Resources, Construction, and Maintenance (%)	Production, Transportation, and Material-Moving (%)
1604-3	2.5	38.2	24.6	19.6	15.1
1604-4	16.9	50.2	18.8	0.0	14.0
1605-1	4.6	39.0	28.0	10.6	17.7
1605-2	8.4	6.7	67.4	5.1	12.4
1605-3	27.3	16.2	29.8	7.6	19.2
1605-4	16.4	18.2	48.2	0.0	17.3
1605-5	23.9	20.2	45.9	5.4	4.5
1702-1	3.8	46.9	46.9	0.0	2.3
1702-2	5.0	24.6	31.5	0.0	38.8
1702-3	44.8	8.8	36.1	0.0	10.3
1703-1	33.9	7.8	41.7	2.6	13.9
1703-2	46.0	11.9	19.4	5.1	17.5
2001-1	35.8	15.1	40.5	8.6	0.0
2001-2	21.7	21.7	34.3	9.2	13.0
2002-1	22.7	30.8	24.2	11.6	10.6
2002-2	0.0	22.1	33.8	0.0	44.1
2002-3	16.1	24.4	55.6	0.0	3.9
2002-4	13.5	31.3	13.5	14.6	27.1
2002-5	16.2	19.8	28.4	0.0	35.6
2004-2	20.6	18.4	25.2	8.7	26.9
2006-1	12.8	19.9	37.0	17.8	12.5

Source: U.S. Census Bureau, 2009-2013 5-Year American Community Survey

Appendix F

B&P TUNNEL PROJECT

List of Permits

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation

List of Anticipated Permits and Approvals

The following federal, state, and local permits and approvals may be required for implementation of the Preferred Alternative.

Table 1: Anticipated Permits and Approvals Required for the Preferred Alternative

Project Impacts/Compliance	Authorizing or Coordinating Agency	Regulatory Requirement/Permit Application
Federal Authorizations/Compliance		
Rare, Threatened, and Endangered Species	U.S. Fish and Wildlife Service (USFWS), Maryland Department of Natural Resources (MDNR)	Endangered Species Act, Section 7 Compliance: Environmental Review
Archeological and Historic Resources	Maryland Historic Trust (MHT), Baltimore City's Commission for Historical & Architectural Preservation (CHAP), Consulting Parties	National Historic Preservation Act, Section 106 Compliance
Public Parks/Lands & Historic Sites	Federal Railroad Administration (FRA)	Section 4(f) Compliance
Noise & Vibration	FRA	Noise and vibration assessment / control / mitigation
Air Quality	FRA, US Environmental Protection Agency	Clean Air Act
State Authorizations/Compliance		
Development within 100-Year Floodplain	Maryland Department of the Environment (MDE)	Nontidal Wetlands and Waterways Permit and Individual Water Quality Certification: Joint Federal/State Application for the Alteration of any Floodplain Waterway, Tidal or Nontidal Wetland in Maryland
Stormwater Management and Erosion and Sediment Control	MDE Sediment, Stormwater & Dam Safety Program	Stormwater Management Approval: Waterway Construction Permit; Erosion and Sediment Control Plan Approval
Stormwater Management Associated with Construction Activity	MDE Sediment, Stormwater & Dam Safety Program	National Pollutant Discharge Elimination System (NPDES) Notice of Intent (NOI) for general permit coverage

Project Impacts/Compliance	Authorizing or Coordinating Agency	Regulatory Requirement/Permit Application
Dewatering and Groundwater Withdrawal for Dewatering Operations	MDE	MDE Water Appropriations Permit
Operation/Equipment that Discharges Emissions	MDE, Air Permits Program	Air Quality Permit to Construct
Noise & Vibration	MDE	Compliance to MDE 26.02.03 Control of Noise Pollution or receive variance during construction phase
Local Authorizations/Compliance		
Development within 100-Year Floodplain	Baltimore City Department of Planning	Submission of Development Plans with elevation of project
Dewatering and Groundwater Withdrawal for Dewatering Operations	Baltimore City Department of Planning	Well Construction Permit
Clearing Forest	Baltimore City Department of Planning	Forest Conservation Act Approval: Forest Stand Delineation, Forest Conservation Plan
Removal of Street Trees	Baltimore City Department of Recreation and Parks, Forestry Division	Baltimore City Street Tree Removal and Replacement Approval/Permit
Construction Projects	Baltimore City Department of Housing and Community Development (DHCD)	Building Permit. Upload construction plans to E-plans
Construction within Right of Way	Baltimore City Department of General Services (DGS)	Developers Agreement
Impacts to Surrounding Transportation Network & Communities	Baltimore City Department of Transportation (DOT)	Traffic Impact Study (TIS)
New Facilities	Baltimore City Department of General Services	Construction Permit
Noise & Vibration	Baltimore City Department of Planning	Construction sites exempt to Health Code of Baltimore City (9-103.b Noise Regulation)
Railroad Access	Amtrak, Norfolk Southern, MARC	Railroad Access Permit, required in conjunction with railroad agreements

Appendix G

List of Authorizing Laws and Regulations

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department
of Transportation

Potentially Applicable Laws, Regulations and Policies Associated with the B&P Tunnel Project

AGENCY	LAWS, REGULATIONS, AND POLICIES
FEDERAL	
Advisory Council on Historic Preservation (ACHP)	National Historic Preservation Act (NHPA) of 1966, Section 106 (36 CFR 60 and 36 CFR 800)
Council on Environmental Quality (CEQ)	National Environmental Policy Act of 1969 (40 CFR Parts 1500 - 1508)
US Environmental Protection Agency (EPA)	Title VI of the Civil Rights Act of 1964 (23 CFR Part 200)
US Department of Transportation (Federal Railroad Administration)	Department of Transportation Act of 1966 (49 USC Part 303)
Federal Railroad Administration (FRA)	American Recovery and Reinvestment Act (ARRA) of 2009 (48 CFR Parts 1201-1253)
Federal Railroad Administration (FRA)	Passenger Rail Investment and Improvement Act (PRIIA) of 2008
Federal Railroad Administration (FRA)	Railroad Noise Emissions Compliance Regulation (49 CFR Part 210)
Office of the Secretary of Transportation (OST)	DOT Order 5610.1D - Procedures for Considering Environmental Impacts
US Army Corps of Engineers (USACE)	Clean Water Act, Section 404 Review/Federal Pollution Control Act (33 CFR Part 320 and 40 CFR Part 230)
US Department of the Interior	Archaeological Resources Protection Act of 1979 (43 CFR Parts 7, 43, and 79)
US Department of the Interior	Archeological and Historic Preservation Act (43 CFR Part 7)
US Department of the Interior	Coastal Zone Management Act of 1972
US Department of Transportation (DOT)	DOT Order 5610.2(a)-Department of Transportation Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
US Department of Transportation	DOT Order 5650.2 Floodplain Management
US Department of Transportation	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) (49 CFR Part 24)
US Department of Transportation, Federal Railroad Administration (FRA)	Procedures for Considering Environmental Impacts (78 FR 2731 and 64 FR 28545)
US Environmental Protection Agency (EPA)	Clean Air Act (42 U.S.C. 7401 et seq)
US Environmental Protection Agency	Clean Water Act, Section 401 (Water Quality Certification), Section 402 (NPDES), Section 404

AGENCY	LAWS, REGULATIONS, AND POLICIES
US Environmental Protection Agency	Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA) (40 CFR Parts 300-374)
US Environmental Protection Agency	Noise Control Act of 1972 (40 CFR Part 201)
US Environmental Protection Agency	Occupational Safety and Health Act (OSHA)
US Environmental Protection Agency	Pollution Prevention Act of 1990
US Environmental Protection Agency	Resource Conservation and Recovery Act of 1976 (RCRA) (40 CFR Parts 260-282)
US Environmental Protection Agency	Superfund Amendments and Reauthorization Act of 1986 (SARA) (40 CFR Parts 302, 350, 355, 370, and 374)
US Environmental Protection Agency	Toxics Substance Control Act (TSCA)
US Fish and Wildlife Service (USFWS)	Bald and Golden Eagle Management Act (50 CFR Parts 13 and 22)
US Fish and Wildlife Service (USFWS)	Endangered Species Act (ESA) (50 CFR Part 402)
US Fish and Wildlife Service (USFWS)	Fish and Wildlife Coordination Act, Section 7 and Section 10 (50 CFR Part 83)
US Fish and Wildlife Service (USFWS)	Migratory Bird Treaty Act (50 CFR Part 10, 12, 20, and 21)
STATE	
Maryland Department of Natural Resources (MDNR)	Forest Conservation Act (Natural Resource Article 5-1601 through 1613, COMAR 08.19.01 and COMAR 08.19.04)
Maryland Department of Natural Resources	Maryland's Enforceable Coastal Policies
Maryland Department of Natural Resources	Nongame and Endangered Species Conservation Act (Annotated Code of Maryland 10-2A-01 and COMAR 08.03.08)
Maryland Department of Natural Resources	Roadside Tree Law (Natural Resource Article 5-401 through 5-411); Forest and Parks: Roadside Tree Care (COMAR 08.07.02); Tree Planting (COMAR 08.07.02.09)
Maryland Department of Natural Resources	Soil Conservation Policies (Agricultural Article 8-102)
Maryland Department of the Environment (MDE)	Air Quality: Ambient Air Quality Standards (COMAR 26.11.04); General Emission Standards, Prohibitions, and Restrictions COMAR (26.11.06); Control of Asbestos (COMAR 26.11.04)
Maryland Department of the Environment	Non Tidal Wetlands (COMAR 26.23.01)
Maryland Department of the Environment	Occupational, Industrial, and Residential Hazards: Control of Noise Pollution (COMAR 26.02.03); Hazardous Substances (COMAR 26.02.04); Procedures

AGENCY	LAWS, REGULATIONS, AND POLICIES
	for Abating Lead Containing Substances from Buildings (COMAR 26.02.07)
Maryland Department of the Environment	Regulation of Water Supply, Sewage Disposal, and Solid Waste (COMAR 26.04.07)
Maryland Department of the Environment	Water Management: Erosion and Sediment Control (COMAR 26.17.01); Stormwater Management (COMAR 26.17.02); Construction on Nontidal Waters and Floodplains (COMAR 26.17.04); Water Appropriation or Use (COMAR 26.17.06)
Maryland Department of the Environment	Water Pollution: Water Quality, Permits, and Underground Injection Control (COMAR 26.08.02, COMAR 26.08.04, and COMAR 26.08.07)
Maryland Department of the Environment	Water Supply, Sewerage, Solid Waste, and Pollution Control Planning and Funding (COMAR 26.03.07)
Maryland Department of Transportation	Transportation Planning Process - the Action Plan (COMAR 11.01.06.02)
Maryland Historic Trust	Maryland Historic Trust Act of 1985, State Finance and Procurement (Annotated Code of Maryland, Article 5A-325 and 5A-326)
LOCAL	
Baltimore Board of Estimates/Department of Recreation and Parks	Code of Public Local Laws Railroads -General Provisions (Article 4 Subtitle 18-1 to 18-4); Franchises (Subtitle 18-5); Railway Easements in Annex (Subtitle 18-13 to 18-14)
Baltimore City Department of Health	Baltimore City Code - Revised Articles; Health Code of Baltimore City - Waste Control (Title 7 Subtitle 5); Waste Water from Hydraulic Fracturing; Noise Regulation (Title 9 Subtitles 1 and 2)
Baltimore City Department of Planning	Baltimore City Code - Unrevised Articles; Natural Resources -Division IV Forest and Tree Conservation (Article 7 Subtitle 41-1 to 41-4)
Baltimore City Department of Public Works (DPW)	Baltimore City Code - Unrevised Articles; Jones' Falls (Article 25 Subtitle 18-1 to 18-2)
Baltimore City Department of Public Works	Baltimore City Code - Unrevised Articles; Natural Resources -Division II Stormwater Management (Article 7 Subtitle 21-1 to 21-6); Natural Resources - Division II Stormwater Management Plans (Article 7 Subtitle 22-1 to 22-10); Permits, Fees, Security (Article 7 Subtitle 25-1 to 25-4); Inspections (Article 7 Subtitle 26-1 to 26-8)

AGENCY	LAWS, REGULATIONS, AND POLICIES
Baltimore City Department of Public Works	Baltimore City Code - Unrevised Articles; Natural Resources -Division III Soil Erosion and Sediment Control (Article 7 Subtitle 31-1 to 31-10); Plans (Article 7 Subtitle 32-1 to 32-9); Permits, Fees, Security (Article 7 Subtitle 33-1 to 33-3)
Baltimore City Department of Public Works	Baltimore City Code - Unrevised Articles; Stormwater Remediation Fees -General Provisions; Watershed Protection and Restoration; Fee Imposition and Collection; Stormwater Utility (Article 27, Subtitle 1, 2, 3, and 5)
Baltimore City Department of Public Works	Code of Public Local Laws Streets, Bridges, and Highways (Article 4 Subtitle 21-1 to 21-32)
Baltimore City Department of Public Works/ Department of Recreation and Parks	Baltimore City Code - Unrevised Articles; Natural Resources -Division V Trees Along City Streets (Article 7 Subtitle 53-1 to 53-26)
Baltimore City Department of Transportation/Department of Public Works	Baltimore City Code - Unrevised Articles; Surveys, Streets, and Highways Article 26 - Survey Authority; Opening, Widening, Closing Streets; Bridges; Street Cuts (Article 26, Subtitle 1, 3, 14, and 15)
Baltimore City Department of Transportation/Department of Public Works	Baltimore City Code - Unrevised Articles; Transit and Traffic - Definitions; General Provisions; General Administration; Parking, Standing, and Stopping Regulations; Grade Crossings; Commercial Vehicle Monitoring System (Article 31 Subtitles 1, 2, 6, 19, and 34)
Commission for Historical and Architectural Preservation (CHAP)	Baltimore City Code - Unrevised Articles; Historic and Architectural Preservation (Article 6 Subtitle 8-1 to 8-15)
Commission for Historical and Architectural Preservation (CHAP)	Baltimore City Code - Unrevised Articles; Historic and Architectural Preservation (Article 6 Subtitle 9-1 to 9-8)
Environmental Control Board	Baltimore City Code - Unrevised Articles Mayor, City Council and Municipal Agencies (Article 1 Subtitle 40-1 to 40-14)

Appendix H

B&P TUNNEL PROJECT

Programmatic Agreement

Appendix H

PROJECT PROGRAMMATIC AGREEMENT

Among the
FEDERAL RAILROAD ADMINISTRATION
MARYLAND STATE HISTORIC PRESERVATION OFFICER
NATIONAL RAILROAD PASSENGER CORPORATION
And
PRESERVATION MARYLAND

Regarding the
BALTIMORE AND POTOMAC TUNNEL PROJECT
BALTIMORE CITY, MARYLAND

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WHEREAS, the existing 1.4-mile-long Baltimore & Potomac (B&P) Railroad Tunnel (B&P Tunnel), located along the National Railroad Passenger Corporation's (Amtrak) Northeast Corridor (NEC) in Baltimore City, was constructed in 1873 and is nearing the end of its useful life, with existing structural and operational deficiencies that cannot accommodate projected regional high-speed travel requirements on the NEC; and

WHEREAS, the Federal Railroad Administration (FRA) has provided grant funding to the Maryland Department of Transportation (MDOT) to carry out preliminary engineering and environmental analyses in compliance with the National Environmental Policy Act (42 U.S.C. § 4321 et. seq.) (NEPA) for alternatives to replace the existing tunnel (PE/NEPA); and

WHEREAS, FRA is preparing an Environmental Impact Statement (EIS) pursuant to NEPA and has coordinated the NEPA processes with consultation pursuant to Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 306108) (NHPA), as amended, and its implementing regulations at 36 CFR § 800 (hereinafter collectively referred to as Section 106); and

WHEREAS, the Preferred Alternative identified in the Final EIS consists of replacing the existing B&P Tunnel by constructing a new 1.9-mile-long, four-bore tunnel along a new four-track alignment within Baltimore City, together with three ventilation facilities (one each at the north and south tunnel portals and one at an intermediate location along West North Avenue) and associated bridges, cuts, retaining walls, water management systems, track work, and electrified traction infrastructure (hereinafter referred to as the Project) (**Attachment 1**); and

WHEREAS, determining the final disposition of the existing B&P Tunnel and associated track alignment is not a part of the Project and has not been addressed; and

WHEREAS, Amtrak, owner and operator of the NEC and the existing B&P Tunnel, has acted as the Project designer responsible for carrying out the preliminary engineering in support of the NEPA documentation process; and

WHEREAS, FRA has determined that, should FRA provide funding for the Project, it would be an undertaking pursuant to Section 106, and FRA would be responsible for compliance with Section 106; and

WHEREAS, should FRA provide funding for the Project, FRA intends to use this Project Programmatic Agreement (PA) to satisfy its Section 106 responsibilities; and

WHEREAS, FRA, in consultation with the Maryland State Historic Preservation Officer (MD SHPO), has defined the Project's area of potential effects (APE) for historic architecture (**Attachments 2 and 3**) and conducted technical studies for both historic architecture and archeology pursuant to Section 106 (**Attachment 4**); and

WHEREAS, FRA invited parties to consult and some accepted, and FRA has consulted with 1) Delaware Tribe of Indians; 2) Shawnee Tribe; 3) Baltimore City Commission for Historical and Architectural Preservation ; 4) Baltimore City Department of Transportation; 5) Baltimore City Planning Department; 6) Baltimore Heritage; 7) Baltimore Heritage Area Association; 8) Historic Mount Royal Terrace Association; 9) Maryland Commission on Indian Affairs (MCIA); 10) Maryland Department of Transportation; 11) Maryland Transit Administration; 12) Midtown Edmondson Improvement Association; 13) Mount Royal Improvement Association; and 14) Preservation Maryland regarding the effects of the Project on historic properties and has afforded the public-at-large an opportunity to comment through the concurrent NEPA public involvement process; and

WHEREAS, through consultation, FRA has identified the following seventeen (17) architectural historic properties in the APE that are listed in or eligible for listing in the National Register of Historic Places (NRHP) (see **Attachments 2 and 3**):

1. Baltimore and Ohio (B&O) Railroad, Baltimore Belt Line (B-5287)
2. B&O Railroad, Baltimore Belt Line Bridge over Jones Falls Valley (B-5288)
3. B&P Railroad (Philadelphia, Baltimore and Washington Railroad) (B-5164)
4. Union Railroad (B-5163)
5. Howard Street Bridge (BC1405) (B-4529)
6. North Avenue Bridge (BC1208) (B-4521)
7. Reservoir Hill Historic District (B-1379)
8. Bolton Hill Historic District (B-64)
9. Midtown Edmondson Historic District (NRHP Nomination Pending)
10. Bridge BC 2410 (Lafayette Avenue over Amtrak) (B-4553)
11. Atlas Safe Deposit and Storage Company Warehouse Complex (B-5188-2)
12. American Ice Company (B-1040)
13. Greater Rosemont Historic District (B-5112)
14. Edmondson Avenue Historic District (B-5187)
15. Ward Baking Company (B-5112-2)
16. Fire Department Engine House No. 36 (B-5112-4)
17. Pennsylvania Railroad Viaduct (B-5064); and

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WHEREAS, through consultation, FRA has determined that the Project, if constructed, will have an adverse effect on the following nine historic properties:

1. B&O Railroad, Baltimore Belt Line
2. B&O Railroad, Baltimore Belt Line Bridge over Jones Falls Valley
3. B&P Railroad (Philadelphia, Baltimore and Washington Railroad)
4. Reservoir Hill Historic District
5. Midtown Edmondson Historic District
6. Bridge BC 2410 (Lafayette Avenue over Amtrak)
7. Atlas Safe Deposit and Storage Company Warehouse Complex
8. Greater Rosemont Historic District
9. Edmondson Avenue Historic District; and

WHEREAS, through consultation, FRA has concluded that the Project is located in an area with potential for both pre- and post-contact archeological resources but that Project designs cannot be sufficiently advanced at this time, and the identification and effects on archeological resources cannot be fully determined prior to approval of the Project; and

WHEREAS, through consultation, FRA has elected to complete the final identification, evaluation, and effects assessment on archeological resources in phases, pursuant to 36 CFR § 800.4(b)(2) and 800.5(a)(3), and in accordance with the ongoing consultation process specified in this PA pursuant to 36 CFR § 800.14(b); and

WHEREAS, FRA has invited Amtrak, as the Project designer, owner, and operator of the NEC, to participate in this PA as an invited signatory with responsibilities under this PA, and Amtrak has accepted; and

WHEREAS, FRA has invited Preservation Maryland, a private non-profit organization with a demonstrated focus on, and expertise in, historic preservation and grants administration, to participate in this PA as an invited signatory with responsibilities under this PA, and Preservation Maryland has accepted; and

WHEREAS, the MD SHPO agrees that fulfillment of the terms of this MOA will satisfy the responsibilities of any Maryland state agency under the requirements of the Maryland Historical Trust Act of 1985, as amended, State Finance and Procurement Article §§ 5A-325 and 5A-326 of the Annotated Code of Maryland, for any components of the Project that require licensing, permitting, and/or funding actions from Maryland state agencies; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), FRA has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination and intention to enter into a PA with specified documentation by letter dated April 6, 2016, and the ACHP, by letter dated June 7, 2016, declined to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii); and

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NOW, THEREFORE, FRA, the MD SHPO, Amtrak, and Preservation Maryland (each a signatory and together signatories) agree the Project will be implemented in accordance with the following stipulations in order to take into account the effect of the Project on historic properties.

STIPULATIONS

I. APPLICABILITY

A. With the exception of the identification, assessment, and adoption of treatment measures (Stipulations VI, VII, and VIII), this PA would apply to FRA's undertaking and would only bind FRA if FRA provides financial assistance for activities necessary to advance the Project toward and/or through construction.

B. Notwithstanding Stipulation I.A., this PA applies to all of Amtrak's activities necessary to advance the Project toward and/or through construction, including, but not limited to, further design, acquisition of property for the Project, demolition of acquired properties, and construction that are funded with any amount of financial assistance from FRA or non-federal funds. Nothing herein shall be interpreted as agreement by Amtrak that Section 106 applies to other Amtrak projects with independent utility that use exclusively non-federal funds. This PA does not apply to actions or activities having independent utility that Amtrak may carry out, including the normal maintenance, upkeep, and continued safe operation of the NEC.

C. This PA could apply should another federal agency have an undertaking as part of the Project; that agency may adopt this PA and agree to comply with its terms to fulfill its Section 106 responsibilities, as provided for in Stipulation XIV.

II. TIMING

Activities necessary to advance the Project toward and/or through construction may be phased or implemented incrementally, as appropriate, relative to the schedule(s) and funding availability for further design and construction.

III. ROLES AND RESPONSIBILITIES

A. FRA, as a signatory and the lead federal agency for the Project, has authority to execute, amend, and/or terminate this PA. FRA will ensure that the identification, assessment, and adoption of treatment measures are carried out in accordance with the procedures established in Stipulations VI, VII, and VIII, regardless of whether activities necessary to advance the Project toward and/or through construction are funded with financial assistance from FRA or non-federal funds. If FRA provides financial assistance for the Project, in addition to ensuring that the identification, assessment, and adoption of treatment measures are carried out in accordance with the procedures established in Stipulations VI, VII, and VIII, FRA will also ensure that all other stipulations and procedures in this PA are carried out, as appropriate, in accordance with the terms prescribed in this PA. If FRA provides financial assistance for activities necessary to advance the Project toward and/or through construction, FRA will continue to consult with all parties identified in the initial Section 106 consultation process resulting in the creation of this PA, and, as needed, FRA will identify and invite additional consulting

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parties to participate in the implementation of this PA. FRA will have sole authority to conduct government-to-government consultation with federally recognized Native American tribes, as needed.

B. The MD SHPO, as a signatory with responsibility for regulatory review and compliance, has authority to execute, amend, and/or terminate this PA and is also responsible for providing formal review and comment for actions requiring the same as part of carrying out this PA.

C. Amtrak, as an invited signatory, has the same rights with regard to seeking amendment and/or termination of this PA as other signatories and will ensure that specified stipulations and procedures, for which it has assumed responsibility, are carried out in accordance with the terms prescribed in this PA.

D. Preservation Maryland, as an invited signatory, has the same rights with regard to seeking amendment and/or termination of this PA as other signatories and ensures that specified stipulations and procedures, for which it has assumed responsibility, are carried out in accordance with the terms prescribed in this PA.

E. Consulting parties include certain additional individuals or organizations with a demonstrated interest in the Project who have already participated in, or who may later join in as consulting parties in the Section 106 process due to the nature of their legal or economic relation to the Project or affected properties, or their concern with the Project's effects on historic properties. Consulting parties, who may also have signed this PA as a concurring party, retain their rights as consulting parties to participate in on-going consultation prescribed by this PA, and attain no additional rights relative to this PA.

F. Concurring parties are consulting parties who have been invited to concur in this PA. Concurring parties to this PA are able to review and comment on draft documentation prepared pursuant to stipulations herein.

IV. PROFESSIONAL QUALIFICATIONS AND STANDARDS

A. Amtrak will ensure that all work carried out pursuant to this PA will be done by or under the direct supervision of a qualified professional in the disciplines of Archeology, Architectural History and/or Historic Architecture who meets the relevant standards outlined in the Secretary of the Interior's *Professional Qualifications Standards for Archeology and Historic Preservation* (36 CFR § 61) (http://www.nps.gov/history/local-law/arch_stnds_9.htm).

B. Implementation of the stipulations pursuant to this PA will utilize, as appropriate, the following regulations, policies, standards, and guidelines, or any subsequent replacements of or revisions to same:

- Section 106, NHPA, as amended, and its implementing regulations (36 CFR § 800)
- *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic*

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Buildings (National Park Service 1995)

- *Historic American Buildings Survey Guide to Field Documentation* (National Park Service, May 16, 2011)
- *Historic American Buildings Survey Guidelines for Historical Reports* (National Park Service 2007)
- *Heritage Documentation Programs, HABS/HAER/HALS Photography Guidelines* (National Park Service, November 2011, updated June 2015)
- *Standards and Guidelines for Architectural and Historical Investigations in Maryland* (Maryland Historical Trust, 2000)
- *Guidelines for Compliance-Generated Determinations of Eligibility (DOEs)* (Maryland Historical Trust, 2002)
- *Standards for Submission of Digital Images to the Maryland Inventory of Historic Properties* (Maryland Historical Trust, effective January 2008, revised January 2015)
- *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716)
- *Section 106 Archaeology Guidance* (ACHP, 2009)
- *Standards and Guidelines for Archeological Investigations in Maryland* (Maryland Historical Trust, 1994)
- *Collections and Conservation Standards, Technical Update No. 1 of the Standards and Guidelines for Archeological Investigations in Maryland* (Maryland Historical Trust, Revised 2005)
- Curation of Federally-Owned and Administered Archeological Collections (36 CFR § 79)
- Native American Graves Protection and Repatriation Act of 1990 (43 CFR § 10, as amended)
- Maryland Burial Law (Title 10 Subtitle 4 §§ 10-401 through 10-404 of the Annotated Code of Maryland)
- *Policy Statement Regarding Treatment of Burial Sites, Human Remains and Funerary Objects* (ACHP, February 23, 2007)

V. TREATMENT MEASURES FOR ARCHITECTURAL RESOURCES

A. Amtrak, in consultation with the signatories and other consulting parties and, if using FRA financial assistance for activities necessary to advance the Project toward and/or through construction, as directed by and under the authority of FRA, will mitigate Project effects on architectural historic properties according to the stipulations and procedures outlined below. Amtrak will initiate the architectural stipulations and complete the stipulations in accordance with the Project phasing and the deadlines established herein.

B. Preservation Grant Fund

1. Amtrak will establish, subject to available funding, which may include federal financial assistance, a Preservation Grant Fund not to exceed two million dollars ($2,000,000.00), to be held and administered by Preservation Maryland for the purpose of providing direct financial assistance to individuals, organizations, and private developers toward Preservation Projects involving exterior stabilization, repair,

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restoration, and rehabilitation of individual historic properties and contributing elements of historic districts listed in or eligible for listing in the NRHP. Preservation Projects eligible to receive funds through the Preservation Grant Fund will be limited to, and prioritized by, a two-tiered geographic area. First priority (Tier 1) will extend to eligible Preservation Projects located inside the boundary of the APE for the south portal as delineated on **Attachment 3**. Second priority (Tier 2) will extend to eligible Preservation Projects located inside the boundaries of both the Midtown Edmondson Historic District and the Edmondson Avenue Historic District as delineated on **Attachment 3**.

2. Financial allocations to the Preservation Grant Fund will be determined at the time all or part of activities necessary to advance the Project toward and/or through construction are funded and ready to advance (e.g., at the time design- and construction-related activities contracts/agreements are signed), including, for example, further design, acquisition of property for the Project, demolition of acquired properties, and construction, that are funded with any amount of financial assistance from FRA or any other non-federal funds.

3. Amtrak will deposit monies to the Preservation Grant Fund based upon a range of 0.1 to 0.25 percent of each awarded contract value, but not exceeding the specified maximum dollar amount. The Preservation Grant Fund will be sourced from the total funding committed to activities necessary to advance the Project toward and/or through construction, to the extent allowable by law and, if sourced by FRA financial assistance, consistent with FRA policy and applicable federal grant requirements (e.g., 2 CFR § 200, Uniform Administrative Requirements, Cost Principles and Audit Requirements for Federal Awards). All funds allocated to the Preservation Grant Fund will be distributed and spent, and all Preservation Projects and related administrative tasks will be completed, within five (5) years of the date that funding for the corresponding construction or construction-related activities was obligated, unless otherwise required by law. A portion of the Preservation Grant Fund may be used to cover the cost of its administration. The form, amount, and timing of each deposit (e.g., installment payment or lump-sum payment) into the Preservation Grant Fund will be at the discretion of Amtrak and any entity awarding financial assistance to Amtrak for the Project.

4. The financial assistance offered through the Preservation Grant Fund may vary in type, amount, and duration. It may consist of both full grants and grants with matching funds requirements, grants of different dollar amounts, and grants with different deadlines for completion.

5. Prior to providing funding to the Preservation Grant Fund, Preservation Maryland and the other signatories will execute a Fund Agreement governing the implementation and management of the Preservation Grant Fund. The final terms and conditions of the Fund Agreement will be determined by Preservation Maryland and the other signatories, and will consider, as appropriate, the following:

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a) A procedure for accommodating the administrative cost of implementing the Preservation Grant Fund;

b) Designation of the types, amounts, and durations of grants to be made available through the Preservation Grant Fund;

c) Criteria and procedures for applying for funds from the Preservation Grant Fund, including a requirement that all Preservation Projects adhere to the Secretary of the Interior's *Standards for the Treatment of Historic Properties*;

d) Criteria and procedures for selecting eligible Preservation Projects to fund and awarding grant dollars in support of the same;

e) A plan for advertising the Preservation Grant Fund to eligible applicants;

f) Requirements and procedures to account for the expenditure of awarded grants from the Preservation Grant Fund on Preservation Projects and for administrative costs, including steps for the accounting and auditing of funds according to generally accepted accounting principles or any other requirements of the signatories or other agencies providing funding for the Project;

g) Requirements and procedures for reporting on, completing, inspecting, and closing out Preservation Projects;

h) As appropriate, procedures for marketing and/or distributing salvaged materials obtained through the provisions of Stipulation H herein for use in Preservation Projects;

i) Procedures for measuring and reporting progress on the implementation and administration of the Preservation Grant Fund;

j) Indemnification by Preservation Maryland of all contributors and signatories to the PA; and

k) Procedures for amending and terminating the Fund Agreement.

6. In the event that the Preservation Grant Fund cannot be established because a Fund Agreement is not established, Preservation Maryland is unwilling to accept the responsibilities of this provision, an alternate third-party Fund Administrator cannot be identified, or for any other reason, the signatories and consulting parties will consult to identify other means of mitigating the Project's adverse effects on historic properties, which will be documented and agreed upon in an amendment to this PA following the procedures in Stipulation XVI.

C. Context-Sensitive Design

1. Amtrak, in consultation with the MD SHPO, will develop and apply context-

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sensitive design treatments for specified new buildings and structures consistent with the standards and guidelines outlined in Stipulation IV.B. The treatments will be informed by, and responsive to, the significance and character-defining features of specified historic properties affected by the new construction and will include consideration of the form, scale, design, material, color, and texture of all exterior visible surfaces. Building and tunnel interiors are expressly exempted from this provision. Where a project element is owned by a non-signatory to this PA that is unwilling to allow such design, Amtrak will have no obligation to accomplish context-sensitive design for that element.

2. The following table describes the only new construction elements to which context-sensitive design treatments will apply and the associated historic property or properties to which the designs will respond.

New Construction	**Associated Historic Properties**
CSX Railroad Bridge over Jones Falls Valley	B&O Railroad, Baltimore Belt Line; B&O Railroad Baltimore Belt Line Bridge over Jones Falls Valley
North Portal	B&P Railroad (Philadelphia, Baltimore and Washington Railroad)
Intermediate Ventilation Facility	Reservoir Hill Historic District; Bolton Hill Historic District
South Portal Cut-and-Cover Structure	B&P Railroad (Philadelphia, Baltimore and Washington Railroad); Midtown Edmondson Historic District
South Ventilation Facility	B&P Railroad (Philadelphia, Baltimore and Washington Railroad); Midtown Edmondson Historic District
Retaining Walls	B&P Railroad (Philadelphia, Baltimore and Washington Railroad)
Catenary Structures	B&P Railroad (Philadelphia, Baltimore and Washington Railroad)
Sound Barriers	Midtown Edmondson Historic District; Greater Rosemont Historic District; Edmondson Avenue Historic District; and/or B&P Railroad (Philadelphia, Baltimore and Washington Railroad)
Bridge BC 2410 (Lafayette Avenue over Amtrak)	Bridge BC 2410 (Lafayette Avenue over Amtrak); B&P Railroad (Philadelphia, Baltimore and Washington Railroad); Midtown Edmondson Historic District
Edmondson Avenue Bridge (BC 2405)	B&P Railroad (Philadelphia, Baltimore and Washington Railroad); Midtown Edmondson Historic District;

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New Construction	Associated Historic Properties
West Franklin Street Bridge	B&P Railroad (Philadelphia, Baltimore and Washington Railroad)
West Baltimore MARC Station	B&P Railroad (Philadelphia, Baltimore and Washington Railroad)
West Mulberry Street Bridge	B&P Railroad (Philadelphia, Baltimore and Washington Railroad)
North Warwick Avenue Bridge	B&P Railroad (Philadelphia, Baltimore and Washington Railroad)
Franklintown Road Bridge	B&P Railroad (Philadelphia, Baltimore and Washington Railroad)

3. Amtrak will ensure individual historic properties and contributing elements of historic districts are clearly labeled on all relevant Project plan sheets.

4. Amtrak will prepare brief descriptions of the significance and character-defining features of each associated historic property and short bulleted recommendations for design guidance, consistent with the Secretary of the Interior's *Standards for the Treatment for Historic Properties* identified in Stipulation IV.B. Amtrak will share the design guidance with the signatories and concurring parties for review and comment following the steps described in Stipulation XI.

5. Amtrak will deliver to the signatories and concurring parties all 60 percent and 90 percent Project plan sheets and specification documents relevant to exterior design treatments under this Stipulation for review and comment following the steps described in Stipulation XI. Amtrak will have the explicit right to limit consultation only to the signatories for design plan sheets Amtrak deems sensitive for security reasons. Recipients will be required to sign Non-Disclosure Agreements certifying confidentiality of the information shared through this process.

6. Amtrak will consider design review comments provided by the signatories and concurring parties, but ultimately is responsible for ensuring that the structural and engineering design of bridges and other structures meets engineering and safety standards for passenger and freight railroads.

D. Historic Properties Construction Protection Plan

1. Amtrak will prepare and enforce a Historic Properties Construction Protection Plan (Protection Plan) to protect against, monitor for, and manage construction-related effects to identified historic properties. The Protection Plan will apply to historic properties located inside, adjacent to, or above the Project limits of disturbance, stockpile locations, construction staging areas, tunneling zones, and any other area in which Project activities may take place.

2. At minimum, the Protection Plan will: identify and map all historic properties subject to the Protection Plan; require security fencing; establish vibration thresholds;

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address potential ground displacements; provide monitoring; and create a publicly-accessible telephone hotline and emergency response procedure for reporting and addressing threats or physical damage to historic properties.

3. Amtrak will develop and distribute the draft Protection Plan with the 90 percent Project plan sheets and specification documents to the signatories and concurring parties for review and comment following the steps described in Stipulation XI. Amtrak will deliver the final Protection Plan with delivery of the 100 percent Project plan sheets and specification documents. Amtrak will have the explicit right to limit consultation only to the signatories for design plan sheets Amtrak deems sensitive for security reasons. Recipients will be required to sign Non-Disclosure Agreements certifying confidentiality of the information shared through this process.

E. Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER) Documentation

1. Amtrak will prepare individual HABS/HAER written and photographic documentation of individual and groups of historic properties and contributing elements to historic districts slated for demolition, for deposit with the National Park Service (NPS) and the MD SHPO. The final number of individual documents will vary, depending on the number of affected historic properties and contributing elements to historic districts. The documents will be organized around the following themes:

a) **B&O Railroad Baltimore Belt Line Bridge over Jones Falls Valley:** A HAER recordation of this historic property will focus on the bridge, which is both individually eligible for the NRHP and a contributing element of the B&O Railroad Baltimore Belt Line. Photographic documentation will record the complete bridge structure, setting, and wider railroad corridor within the vicinity of Jones Falls Valley. Written documentation will focus on the history of the B&O Railroad Baltimore Belt Line, its construction, and the story behind the final location, design, engineering, and method of construction used for building the B&O Railroad Baltimore Belt Line Bridge over Jones Falls Valley.

b) **B&P Railroad (Philadelphia, Baltimore and Washington Railroad):** HAER recordations involving the B&P Railroad and its contributing elements will focus on above-ground railroad-related structures within the B&P Railroad right-of-way between Gwynns Falls and Baltimore's Pennsylvania Station. The photographic documentation will record such elements as overviews of the current right-of-way (including embankments, cuts, retaining walls, industrial sidings, and catenary system). The written documentation will address the railroad's overall construction and evolution, emphasizing the story behind its location, design, engineering, and method of construction. More detailed HAER recordations of the contributing West Franklin Street Bridge, West Mulberry Street Bridge, North Warwick Avenue Bridge, andFranklintown Road Bridge will include photographic documentation of each structure and its individual setting and structural system. Written documentation will focus on each bridge,

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its history and design, and the reasons for its construction. The existing B&P Tunnel is not a part of the Project and is not included in this recordation effort.

c) **Midtown Edmondson Commercial and Industrial Corridor:** HABS recordations involving commercial and industrial properties flanking the B&P Railroad inside the Midtown Edmondson Historic District will include photographic documentation of building exteriors, interiors (if accessible), and settings. The written documentation will address each recorded property within the context of twentieth-century development of the corridor, its relationship to the railroad, the role the property played in the history of the wider Midtown Edmondson Historic District, and more specific information on the building's design, materials, construction techniques, builders, and occupants. Specific historic properties and contributing elements identified for recordation include: the Warehouse at 2020 Mosher Street; the Living Word Church of Deliverance (2100 West Lanvale Street); a storage warehouse (740 North Pulaski Street); the Faith Christian Worship Center (700 North Pulaski Street); the Atlas Safe Deposit and Storage Company Warehouse Complex; the Ward Baking Company; the B&P Railroad Edmondson Avenue Station (2235 Edmondson Avenue); the trade school building (2237 Edmondson Avenue); Fire Department Engine House No. 36; and the automotive service garage (501 North Bentalou Street).

d) **Midtown Edmondson Railroad Grade Separations:** HAER recordations focusing on Bridge BC 2410 (Lafayette Avenue over Amtrak) and/or Bridge BC 2405 (Edmondson Avenue over Amtrak) will include photographic documentation of each complete bridge structure and setting. Written documentation will focus on the history of each bridge, emphasizing the general story of railroad grade separations in Baltimore City and the reasons leading to the final location, design, engineering, and method of construction used for each structure.

e) **Midtown Edmondson Rowhouses:** HABS recordations focusing on residential rowhouses slated for demolition inside the Midtown Edmondson Historic District will include photographic documentation of the overall affected blocks, their settings, and more detailed exterior and interior (if accessible) photographs of the individual building units, ancillary buildings, and yards to be demolished. The written documentation will focus on a general history of residential development within the targeted blocks and more specific information on the design, materials, construction techniques, builders, and past and current occupants of the individual residences to be recorded. This effort will be limited to residential buildings subject to demolition, which at present involves the block of residences located on the west side of North Payson Street between Riggs Avenue and Mosher Street, and the block of residences located on the south side of West Lanvale Street between Pulaski and North Payson Streets.

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f) **Greater Rosemont Rowhouses:** HABS recordations focusing on residential rowhouses slated for demolition inside both the Greater Rosemont and Edmondson Avenue Historic Districts will include photographic documentation of the overall affected block, its setting, and more detailed exterior and interior (if accessible) photographs of the individual units to be demolished. The written documentation will focus on a general history of residential development within the targeted block and more specific information on the design, materials, construction techniques, builders, and past and current occupants of the individual residences to be recorded. This effort will be limited to residential buildings subject to demolition, which at present involves two residences located on the south side of Lauretta Avenue at the intersection of North Bentalou Street (2301 Lauretta Avenue and 2303 Lauretta Avenue).

g) **Reservoir Hill Commercial Building:** This HABS recordation will focus on the commercial building slated for demolition at 900-908 West North Avenue, a contributing element inside the Reservoir Hill Historic District. The photographic documentation will record the exterior, interior (if accessible), and setting of the individual building to be demolished. The written documentation will focus on the role the building played in the development of West North Avenue as a commercial corridor during the first half of the twentieth century, and more specific information on the building's design, materials, construction techniques, builders, and occupants.

2. Amtrak will consult with the NPS Northeast Region HABS/HAER office on the final scope, content, format, and disposition of each recordation effort. This includes consideration of a procedure for an interim submission of the photographic documentation for NPS review and approval, in order to release the buildings for demolition and construction activities prior to completion of the remaining recordation package. The photographic documentation will be prepared using digital images consistent with Level II HABS/HAER photography guidelines contained in Stipulation IV.B.

3. Where possible, the written documentation will draw upon original construction documents, historic photographs, and oral interviews with local residents or individuals possessing special knowledge. Potential repositories to consult for information on individual buildings, structures, and railroad resources include, but are not limited to, the Amtrak archive, National Archives, Maryland State Archives, Maryland Historical Society, Pennsylvania State Archives, Baltimore City Archives, and Enoch Pratt Free Library.

4. As relevant, the content will draw upon research and documentation carried out as part of the interpretive displays (Stipulation V.F.) and railroad boundary clarifications (Stipulation V.G.) conducted as part of this PA.

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5. Amtrak will initiate each HABS/HAER recordation when funds are committed for activities necessary to advance the Project toward and/or through construction that will affect historic properties and/or contributing elements to historic districts and will complete the photographic recordation phase prior to the initiation of mothballing, demolition, and/or construction activities associated with the historic property or contributing element to be documented. Amtrak will leave each building or structure and its associated parcel of land in an unaltered appearance until the photographic documentation phase is completed.

6. Unless otherwise agreed to by the NPS and the MD SHPO, Amtrak will ensure that all documentation is completed and accepted by HABS/HAER prior to the commencement of construction or demolition activities associated with the historic property or contributing element to be documented.

7. Unless otherwise agreed to by NPS and the MD SHPO, Amtrak will provide final copies of each recordation document to the NPS and the MD SHPO, and offer copies to the Maryland State Archives, Maryland Historical Society, and Enoch Pratt Free Library. Copies of railroad-specific recordation documents also will be offered to the B&O Railroad Museum, and the Pennsylvania Railroad Technical & Historical Society.

F. Interpretive Displays

1. Amtrak will develop, fabricate, install, and maintain up to two (2) interpretive signs and/or displays to be located at Baltimore City’s Pennsylvania Station or other appropriate publicly accessible gathering place. The final number, form, location, content, and design-life of the interpretive displays will be decided in consultation among the signatories and concurring parties. Possible interpretive themes for the displays include, but are not limited to, the history and construction of the original B&P Railroad and tunnel; the role of the Pennsylvania Railroad in Baltimore City; the influence of railroads generally on Baltimore City, its neighborhoods, and people; the construction of the new tunnel; and/or archeological discoveries resulting from the Project.

2. To the extent possible, the content will draw upon research and documentation carried out as part of the HABS/HAER recordation (Stipulation V.E.), railroad boundary clarifications (Stipulation V.G.), and archeological studies (Stipulation VI) prescribed in this PA. This includes any oral interviews with local residents or individuals possessing special knowledge.

3. Amtrak will submit draft and final outlines, text copy, exhibition scripts, and/or design documents to the signatories and concurring parties for review and comment following the steps described in Stipulation XI.

4. Amtrak will install the interpretive display(s) within two (2) years of the signing of the Project construction contracts. Amtrak will maintain the interpretive display(s) until the completion of Project construction.

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G. Railroad Historic Property Boundary Clarifications

1. Amtrak will investigate the history, development, use, and evolution of the station facilities and adjoining yards comprising present-day Pennsylvania Station in Baltimore City, for the purposes of clarifying and delineating the official boundaries of railroad-related NRHP-listed and eligible historic properties. The boundary investigation will focus on the area of railroad right-of-way between East North Avenue and Greenmount Avenue. For the purposes of establishing an historic context, specific attention will focus on the following railroads that historically utilized Pennsylvania Station: Northern Central Railroad; B&P Railroad; Union Railroad Company of Baltimore; Western Maryland Railroad; Maryland and Pennsylvania Railroad; Philadelphia, Wilmington and Baltimore Railroad; and Philadelphia, Baltimore and Washington Railroad. Previously identified historic properties requiring clarifications include, but are not limited to, the following: Philadelphia, Wilmington & Baltimore Railroad (B-5164 and AA-1097); Union Railroad (B-5163); Northern Central Railway Engineering Structures Historic District (B-1305 and BA-2874); and Pennsylvania Station (B-3727).

2. Amtrak will consult with the MD SHPO on the final scope and format of the boundary clarifications effort. Examples of appropriate formats include, but are not limited to, addendums to the MD SHPO Maryland Inventory of Historic Properties Forms or Determination of Eligibility Forms. The boundary clarifications will include accompanying geo-referenced map layers linked to current tax parcel boundaries.

3. As relevant, the content will draw upon research and documentation from the HABS/HAER recordation and interpretive displays stipulations (Stipulations V.E. and V.F.) in this PA.

4. Amtrak will submit drafts of the boundary clarifications effort to the signatories and concurring parties for review and comment, following the steps described in Stipulation XI. The final document will be filed with the MD SHPO.

H. Salvage Building Components

1. Amtrak will secure, stockpile, and make available historic building materials salvaged from the Project-related demolition of buildings constituting individual historic properties and/or contributing elements of historic districts.

2. After purchase of the properties, but prior to demolition activities, Amtrak will engage a qualified professional(s) meeting the Secretary of the Interior's *Professional Qualification Standards for Archeology and Historic Preservation* in the disciplines of Architectural History or Historic Architecture to examine each building slated for demolition and identify materials recommended for salvage. Examples of appropriate salvage materials include, but are not limited to: decorative roofing, decorative metal work, stone front steps, stone stoops, stone/terra cotta coping, stone sills, stone lintels, exterior principal façade brick, cornices, window sashes, doors, architraves, balusters, newels, stair rails, hearth stones, and fireplace surrounds.

3. Amtrak will make a reasonable and good-faith effort to ensure standard care is used in removing the materials identified for salvage, transporting them to storage, and securing them from vandalism, theft, and weather, in accordance with all applicable statues and regulations. If salvage items are found to possess or are judged likely to be contaminated by hazardous material or waste, Amtrak may withdraw the material without making it available for use and dispose of the same in accordance with applicable statutes and regulations. However, Amtrak shall not be required to affirmatively certify the condition of salvaged material as safe or appropriate for any particular use.

4. Amtrak will hold the salvaged material for a period of twelve (12) months from the time it is placed into storage, and make it available free of charge and during reasonable hours to parties who present adequate proof of residence or involvement in the rehabilitation or renovation of properties within the Midtown Edmonson or Greater Rosemont Historic Districts, and/or to Preservation Grant Fund recipients, if the Preservation Grant Fund is established and funded at such time that salvaged materials are available. At the end of the retention period, Amtrak may sell or dispose of the remaining unused materials in accordance with applicable statutes and regulations.

5. Amtrak will provide for a means of notifying the public as to the availability of the salvaged material. Amtrak will provide all materials for salvage on an "as-is, where-is" basis, and will make no warranty as to condition, suitability, serviceability, or degree of contamination for any intended subsequent use. Amtrak will prepare and deliver a written receipt to that effect to every recipient for their review and signature, and the receipts will become a part of the official Project record. Recipients will sign a release indemnifying Amtrak and other signatories of this PA against any and all claims arising from the acquisition and use of received salvaged materials.

6. Amtrak will consult with the signatories and concurring parties on the materials proposed for salvage and the provisions and procedures for notification to the public of the availability of salvage materials following the steps outlined in Stipulation XI. Amtrak will incorporate the same into its final plans and specifications for the removal and staging/storage of the salvaged materials.

I. Electronic Informational Platforms

1. Amtrak will add a new section concerning the PA implementation to the existing Project website. The purpose of this stipulation is to provide a platform for the electronic storage and public dissemination of information and content on Project activities and findings related to historic architecture and archeology, including, but not limited to, identified historic properties, Project effects, and mitigation measures addressed in this PA. Examples of content include, but are not limited to, information on preservation grant funding, HABS/HAER documentation, interpretive content and materials, oral histories, salvage efforts and availability, and archeology.

2. Amtrak will consult with the signatories and concurring parties on the final scope and format of the new PA implementation section, including opportunities to partner

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with, and hyperlink to, other relevant preservation/history-based organizations or to utilize other forms of electronic communication.

3. Amtrak will initiate this stipulation at the start of the Project design phase and will maintain and update the PA implementation section, as needed, until Project completion or the termination of the Project.

VI. TREATMENT MEASURES FOR ARCHEOLOGICAL RESOURCES

A. Amtrak, in consultation with the signatories and other consulting parties, will identify and assess Project effects on archeological historic properties according to the stipulations and procedures outlined below. Amtrak will initiate the archeological stipulations and complete the stipulations, including mitigation measures, in accordance with the Project phasing and the deadlines established herein. If using FRA financial assistance for activities necessary to advance the Project toward and/or through construction, Amtrak will complete mitigation measures as directed by and under the authority of FRA. Amtrak will ensure that no ground disturbing activities associated with the Project take place in areas subject to archeological investigation until required fieldwork is completed and approved by the MD SHPO and the location is formally released for ground disturbing activities.

B. Define Archeological APE

In consultation with FRA and MD SHPO, Amtrak, will define the Project APE for archeology (36 CFR § 800.16(d)). The archeological APE will include the Project's limits of disturbance, which consists of the area in which ground disturbance is expected to take place, and can include excavation sites, construction staging areas, material disposal sites, temporary access roads, utility and storm water management sites, and off-site mitigation sites. The archeological APE is subject to change as Project plans advance.

C. Supplemental Phase I Survey

1. At such time that Amtrak commences additional phases of engineering design, and subject to available funding but no later than when funding is available for final design, Amtrak, will conduct a Supplemental Phase IA archeological survey to update the initial Phase IA archeological survey completed in October 2015, and to further refine the archeological context, sensitivity, and predictive models for the location of potential sites within the archeological APE.

2. Amtrak will prepare and submit a technical document containing the results of the Supplemental Phase IA archeological survey, together with proposed recommendations and required work plans for Phase IB testing surveys, if any, to FRA for review. Upon FRA's approval, Amtrak will submit the Phase IA document to the MD SHPO and other consulting parties for review and comment following the steps described in Stipulation XI.

3. Amtrak will complete one or more Phase IB survey(s), as appropriate, to identify archeological resources.

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4. Amtrak will prepare and submit a technical document(s) containing the results of each Phase IB survey, together with proposed recommendations and required work plans for Phase II survey, if any, to FRA for review. Upon FRA's approval, Amtrak will submit the Phase IB document(s) to the MD SHPO and other consulting parties, as appropriate, for review and comment following the steps described in Stipulation XI.

D. Phase II Evaluation

1. Amtrak will complete one or more Phase II survey(s), as appropriate, to evaluate the NRHP eligibility of any intact archeological resources that may be affected by the Project.

2. Amtrak will prepare and submit a technical document(s) containing the results of each Phase II survey, together with proposed NRHP eligibility recommendations, to FRA for review. Upon FRA's approval. Amtrak will submit the Phase II document(s) to the MD SHPO and other consulting parties, as appropriate, for review and comment following the steps described in Stipulation XI. The technical document(s) may be combined with the effects assessment as outlined in Stipulation VI.D.3, below.

3. Amtrak will prepare one or more document(s) containing a proposed assessment of Project effects on archeological historic properties according to the criteria of adverse effects (36 CFR § 800.5), and submit the document(s) to FRA for review. Upon FRA's approval, Amtrak will submit the effects assessment document(s) to the MD SHPO and other consulting parties, as appropriate, for review and comment following the steps described in Stipulation XI. If FRA, in consultation with the signatories and other consulting parties, determines that an archeological historic property will be adversely effected by the Project, the signatories and other consulting parties, as appropriate, will consult on strategies to avoid, minimize, or mitigate the adverse effect. Examples include, but are not limited to, avoidance, protection, alternative mitigation, or data recovery. The effects assessment may be combined with the technical document as outlined in Stipulation VI.D.2, above.

4. Amtrak will memorialize the approach and treatment measures to resolve adverse effects to archeological historic properties in a document submitted to the signatories and other consulting parties, as appropriate, for review and comment following the steps described in Stipulation XI.

5. Upon FRA's approval of the approach and treatment measures memorialized in accordance with Section VI.D.4., above, Amtrak will carry out the approach and treatment measures.

E. Phase III Data Recovery

1. If an adverse effect cannot be avoided or alternatively mitigated, Amtrak, in consultation with signatories and other consulting parties, will mitigate the adverse effect through a program of data recovery.

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2. Amtrak will prepare and submit one or more plan(s) for conducting Phase III data recoveries to the signatories and other consulting parties, as appropriate, for review and comment following the steps described in Stipulation XI. At a minimum, each data recovery plan will include:

a) A list of research questions to be addressed, with a discussion of their relevance and importance;

b) Methods to be used for fieldwork and laboratory analysis, with a justification of their cost-effectiveness and how they apply to the particular sites and the research questions;

c) A schedule for completing field and laboratory work, and submitting draft and final documents for the MD SHPO's review and comment;

d) Methods to be used in managing and curating artifacts, data, and other records;

e) Procedures for evaluating and treating unanticipated discoveries consistent with the provisions of Stipulation VIII;

f) A procedure for documenting the completion of fieldwork and releasing sites for construction activities; and

g) Provisions for disseminating the research findings to other consulting parties, professional peers, and the general public.

3. Upon FRA's approval of the approach and treatment measures memorialized in accordance with Section VI.E.2., above, Amtrak will execute the Phase III data recovery plan(s).

F. Curation

All materials and records resulting from archeological investigations conducted for the Project will be curated in accordance with 36 CFR § 79 at the Maryland Archeological Conservation Laboratory (MAC Lab), unless clear title, Deed of Gift, or federal curation agreement for the collection cannot be obtained. FRA shall consult with the MD SHPO regarding the appropriate disposition of any materials or records not proposed for curation at the MAC Lab.

G. Protection of Archeologically-Sensitive Information

Amtrak will submit copies of all final archeological documents stipulated in this PA to FRA and the MD SHPO. Interim and final archeological documents and related documentation will be distributed to other consulting parties and qualifying agencies only upon request, and in redacted form, as appropriate, in order to ensure the security of archeological sites.

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VII. PROJECT CHANGES

A. Amtrak will afford the signatories and other consulting parties the opportunity to review and comment on Project changes that are of a nature that could potentially affect historic properties. Amtrak will submit written documentation, including Project plan sheets or sketches showing the modification, a brief explanation why the change is needed, and a plan for any proposed Section 106 work, to the signatories and other consulting parties for review and comment following the steps described in Stipulation XI.

B. Historic Architecture

1. As needed, and with assistance from FRA and MD SHPO, Amtrak will refine an APE in consultation with the signatories and other consulting parties. Amtrak will conduct an architectural survey to identify historic properties listed in or eligible for listing in the NRHP, and prepare and submit one or more technical document(s) containing the results of the architectural survey, together with the proposed identification of historic properties and recommendations for next steps, if any, to FRA for review. Upon FRA's approval, Amtrak will submit the document(s) to the MD SHPO and other consulting parties, as appropriate, for review and comment following the steps described in Stipulation XI.

2. Amtrak will prepare one or more document(s), containing a proposed assessment of Project effects on architectural historic properties according to the criteria of adverse effects (36 CFR § 800.5), and submit the document(s) to FRA for review. Upon FRA's approval, Amtrak will submit the effects assessment document(s) to the MD SHPO and other consulting parties, as appropriate, for review and comment following the steps described in Stipulation XI. If FRA, in consultation with the signatories and other consulting parties, determines that an architectural historic property will be adversely effected by the Project, then the signatories and other consulting parties will consult on strategies to avoid, minimize, or mitigate the adverse effect.

3. Amtrak will memorialize the approach and treatment measures to resolve adverse effects to architectural historic properties in one or more document(s) submitted to the signatories and other consulting parties, as appropriate, for review and comment following the steps described in Stipulation XI.

4. Upon FRA's approval of the approach and treatment measures memorialized in accordance with Section VII.B.3., above, Amtrak will carry out the approach and treatment measures.

C. Archeology

Project modifications with the potential to impact archeological deposits will be addressed pursuant to Stipulation VI.

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VIII. UNANTICIPATED DISCOVERIES

A. Amtrak will develop an Unanticipated Discoveries Plan (UDP) to be included in construction and bidding documents for contractor/team use in the event of unanticipated discoveries. The plan will incorporate a procedure for interacting with the media, a chain of contact, and other relevant provisions, as needed. Amtrak will submit the UDP to MD SHPO and FRA for review and comment following the steps described in Stipulation XI.

B. In the event any previously unidentified historic architectural or archeological resource is discovered, Amtrak will require the contractor to halt all work in the area of the resource. For any discovered archeological resources, Amtrak will also halt work in surrounding areas where additional subsurface remains can reasonably be expected to be present. Work in all other areas of the Project may continue.

C. Amtrak will notify the signatories, and other consulting parties, and FRA will notify appropriate federally recognized Native American tribes, if appropriate, within 48 hours of the discovery (36 CFR § 800.13(b)(3)). As needed, FRA will also identify and invite other consulting parties to confer on unanticipated discoveries.

D. Amtrak, in consultation with the signatories and other consulting parties, will investigate the discovery site and resource(s) according to the professional standards and guidelines contained in Stipulation IV. Amtrak will prepare and submit a written document containing a proposed determination of NRHP eligibility of the resource, an assessment of project effects on historic properties, if appropriate, and any recommended treatment measures to FRA for review. Upon FRA’s approval, Amtrak will submit the determination of NRHP eligibility, effects assessment, and/or recommended treatment measures document, if appropriate, to the MD SHPO and other consulting parties, as appropriate, for review and comment. If the potential resource is associated with Native American prehistory or history, FRA will provide the documentation to federally recognized Native American tribes within five (5) working days for their review with a request for comment. The signatories, other consulting parties, and federally recognized Native American tribes, if participating, will respond with any comments within five (5) working days of receipt.

E. If it is necessary to develop treatment measures in accordance with Stipulation VIII.D., above, Amtrak will carry out the approach and treatment measures after approval by FRA.

F. Amtrak will ensure construction work within the affected area does not proceed until FRA, in consultation with the MD SHPO and federally recognized Native American tribes, as appropriate, determines that either 1) the located resource is not NRHP-eligible or 2) the agreed upon treatment measures for historic properties have been implemented.

IX. TREATMENT OF HUMAN REMAINS

A. If human remains are encountered during archeological investigations or construction, Amtrak will require the contractor to immediately halt subsurface disturbance in that portion of the Project area and immediately secure and protect the

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human remains and any associated funerary objects in place in such a way that minimizes further exposure or damage to the remains from the elements, looting, and/or vandalism.

B. Amtrak will immediately notify the Baltimore City Police Department to determine if the discovery is subject to a criminal investigation by law enforcement, and notify the signatories within twenty-four (24) hours of the initial discovery.

C. If a criminal investigation is not appropriate, Amtrak will apply and implement all relevant laws, procedures, policies, and guidelines contained in Stipulation IV.B concerning the treatment and repatriation of burial sites, human remains, and funerary objects.

D. In the event the human remains encountered could be of Native American origin, whether prehistoric or historic, FRA will immediately notify the appropriate federally recognized Native American tribes and MCIA, and consult with them and the MD SHPO to determine the treatment plan for the Native American human remains and any associated funerary objects.

E. If the remains are not of Native American origin, Amtrak will, as appropriate, develop a research design/treatment plan for the appropriate treatment of the remains and any associated artifacts, consistent with procedures and guidelines contained in Stipulation IV.B. and submit the design and plan for review and comment by the signatories and other consulting parties following the steps described in Stipulation XI.

F. Amtrak will ensure the contractor will not proceed with work in the affected area until FRA, in consultation with the MD SHPO and federally recognized Native American tribes, as appropriate, determines the development and implementation of an appropriate research design/treatment plan or other recommended mitigation measures are completed. However, work outside the area may continue.

X. EMERGENCY SITUATIONS

A. Should an emergency situation occur that represents an imminent threat to public health or safety, or creates a hazardous condition and has the potential to affect historic properties, Amtrak will contact the Baltimore City Police Department, as needed, as soon as possible and notify the signatories and other consulting parties within twenty-four (24) hours of the condition which created the emergency, the immediate action taken in response to the emergency, the effects of the response to historic properties, and, where appropriate, further plans to address the emergency. This will include any further proposals to avoid, minimize, or mitigate potential adverse effects to historic properties.

B. The signatories and other consulting parties will have seven (7) days to review and comment on the plan(s) for further action. If FRA, the MD SHPO, and other consulting parties do not object to the plan within the review period, then Amtrak will implement the proposed plan(s).

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C. Where possible, Amtrak will ensure that emergency responses allow for future preservation or restoration of historic properties, take into account the Secretary of the Interior's *Standards for the Treatment of Historic Properties*, and include on-site monitoring by the appropriate qualified professional as contained in Stipulation IV.

D. Immediate rescue and salvage operations conducted to preserve life or property are exempt from these and all other provisions of this PA.

XI. DOCUMENT REVIEW

A. Unless otherwise stated elsewhere in this PA, the signatories, other consulting parties, and/or concurring parties will provide comments on the documents they review to either FRA or Amtrak, as appropriate, and as set forth herein.

B. The signatories, other consulting parties, and/or concurring parties will have up to thirty (30) calendar days from the date of receipt to review and provide written comments to FRA or Amtrak on documents stipulated in this PA.

C. FRA and/or Amtrak will ensure any written comments received within the timeframe are considered and incorporated, as appropriate, into the documentation.

D. If the signatories, other consulting parties, and/or concurring parties do not submit written comments to FRA and/or Amtrak within thirty (30) calendar days of receipt of any document, it is understood the non-responding parties have no comments on the submittal.

E. If the signatories, other consulting parties, and/or concurring parties object to or recommend extensive revisions to submissions stipulated in the PA, FRA and/or Amtrak will work expeditiously to respond to the recommendations and resolve disputes.

F. If FRA and/or Amtrak cannot resolve the disputes, and if further consultation with the signatories, other consulting parties, and/or concurring parties is deemed unproductive by any party, the parties will adhere to the dispute resolution procedures detailed under Stipulation XV, below.

G. The signatories, other consulting parties, and/or concurring parties acknowledge the timeframes set forth in this PA will be the maximum allowed under normal circumstances. In exigent circumstances (e.g., concerns over construction suspensions or delays), all parties agree to expedite their respective document review and dispute resolution obligations.

XII. COMMUNICATIONS

Either paper or electronic mail (email) will serve as the official method of correspondence for all communications regarding this PA and its provisions. **Attachment 5** contains a list of signatories and concurring parties with contact information. Contact information may be updated, as needed, without an amendment to this PA. It is the responsibility of each signatory, consulting party, and/or concurring party to immediately inform FRA and Amtrak of any change in name or contact information for any point of contact. Amtrak will

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forward this information to all signatories, other consulting parties, and concurring parties by email.

XIII. ANTI-DEFICIENCY ACT

FRA's obligations under this PA are subject to the availability of appropriated funds, and the stipulations of this PA are subject to the provisions of the Anti-Deficiency Act (31 U.S.C. § 1341). FRA will make reasonable and good faith efforts to secure the necessary funds to implement this PA in its entirety. If compliance with the Anti-Deficiency Act alters or impairs FRA's ability to implement the stipulations of this agreement, or if another federal agency does not assume responsibility as lead federal agency, signatories will consult in accordance with the amendment or termination procedures found in Stipulations XVI and XVII of this PA.

XIV. ADOPTABILITY

In the event that another federal agency not initially a party to the PA receives an application for funding/license/permit for the Project as described in this PA, that agency may fulfill its Section 106 responsibilities by stating in writing it concurs with the terms of this PA and notifying the signatories that it intends to do so. Such an agreement will be evidenced by the execution of a signature page to this PA and filing with the ACHP, and implementation of the terms of this PA.

XV. DISPUTE RESOLUTION

A. In the event any signatory, consulting party, and/or concurring party to this PA objects in writing to any actions proposed or the manner in which the terms of this PA are implemented, FRA will first consult with the objecting party and other signatories, other consulting parties, and/or concurring parties as appropriate, within thirty (30) calendar days to resolve the objection. If FRA determines that such objection cannot be resolved, FRA will proceed as set forth herein. The form, amount and timing of each deposit (e.g., installment payment or lump-sum payment) into the Preservation Grant Fund are not subject to this Stipulation XV.

B. FRA will forward all documentation relevant to the dispute, including FRA's proposed resolution, to the ACHP within fifteen (15) calendar days of the determination and request that the ACHP provide FRA with its advice on the resolution of the objection within thirty (30) calendar days of receiving the documentation. Concurrently, FRA will also provide the signatories, other consulting parties, and/or concurring parties with the same documentation for review and comment following the steps described in Stipulation XI. FRA will prepare a written response to the objection, which will constitute FRA's decision regarding the objection, that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories, other consulting parties, and/or concurring parties, and provide them with a copy of the written response. FRA will then proceed according to its decision.

C. If the ACHP does not provide its advice regarding the dispute within the thirty (30) calendar day time period, FRA may make a decision on the dispute and proceed accordingly. FRA will document this decision in a written response to the objection that

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takes into account any timely comments regarding the dispute from the signatories, other consulting parties, and/or concurring parties and provide the ACHP, signatories, other consulting parties, and/or concurring parties with a copy of such written response.

D. Should disputes arise under exigent circumstances (e.g., concerns over construction suspensions or delays), all parties agree to expedite their respective document review and dispute resolution obligations.

E. The signatories remain responsible for carrying out all other actions subject to the terms of this PA that are not the subject of the dispute.

XVI. AMENDMENTS

Any signatory to this PA may request that it be amended, whereupon that party will immediately consult with the other signatories within thirty (30) calendar days (or another time period agreed to by all signatories) to consider such an amendment. FRA will be responsible for developing and executing any resulting amendment among the signatories in the same manner as the original PA. The amendment will be effective on the date FRA files a copy signed by all signatories with the ACHP.

XVII. TERMINATION

A. If any signatory to this PA determines its terms will not or cannot be carried out, that party will immediately consult with the other signatories to attempt to develop an amendment per Stipulation XVI. If within thirty (30) calendar days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the PA upon written notification to the other signatories.

B. If the PA is terminated, then, prior to work continuing on the Project, FRA must either, 1) execute a new Memorandum of Agreement or PA (36 CFR § 800.6(c) or 800.14(b)) or 2) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. FRA will notify the signatories and other consulting parties as to the course of action it will pursue.

XVIII. MONITORING AND REPORTING

A. Each year, following the effective date of this PA until it expires or is terminated, Amtrak will provide the signatories, other consulting parties, and/or concurring parties a summary report detailing work undertaken and any tasks completed pursuant to its terms. This includes activities necessary to advance the Project toward and/or through construction. Such a report will include any scheduling changes proposed, problems encountered, and disputes and their resolution in the signatories' efforts to carry out the terms of this PA.

B. Ten business days before commencing any activity necessary to advance the Project toward and/or through construction, Amtrak will provide FRA notice of the activity and any actions to be taken in accordance with this PA.

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XIX. EXECUTION AND EFFECTIVE DATE

This PA will go into effect on the date FRA signs the document, which will be the final signature among all the signatories. Execution of this PA by the signatories, its subsequent filing with the ACHP, and implementation of its terms demonstrate FRA has taken into account the effect of the Project on historic properties and afforded the ACHP an opportunity to comment.

XX. DURATION

This PA will expire when all its stipulations have been completed or in ten (10) years from the effective date, whichever comes first, unless the signatories agree in writing to an extension using the amendment stipulation (Stipulation XVI) herein.

SIGNATORIES
Federal Railroad Administration
Maryland State Historic Preservation Officer

INVITED SIGNATORY
National Railroad Passenger Corporation
Preservation Maryland

CONCURRING PARTIES
Delaware Tribe of Indians (Federally Recognized Tribe)
Shawnee Tribe (Federally Recognized Tribe)
Baltimore City Commission for Historical and Architectural Preservation
Baltimore City Planning Department
Baltimore City Department of Transportation
Baltimore Heritage
Baltimore Heritage Area Association, Inc.
Historic Mount Royal Terrace Association
Maryland Commission on Indian Affairs
Maryland Department of Transportation
Maryland Transit Administration
Midtown Edmondson Improvement Association
Mount Royal Improvement Association

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SIGNATORY

FEDERAL RAILROAD ADMINISTRATION

By: ____ Date: _____________________

Marlys Osterhues
Division Chief, Environmental and Corridor Planning Division

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SIGNATORY

MARYLAND STATE HISTORIC PRESERVATION OFFICER

By: ____ Date: _____________________
Elizabeth Hughes
State Historic Preservation Officer

DRAFT

INVITED SIGNATORY

NATIONAL RAILROAD PASSENGER CORPORATION

By: ______________________________________ Date: ____________________

Charles W. Moorman
President and Chief Executive Officer

DRAFT

INVITED SIGNATORY

PRESERVATION MARYLAND

By: ____ Date: _____________________

Nicholas A. Redding
Executive Director

DRAFT

CONCURRING PARTY

DELAWARE TRIBE OF INDIANS (FEDERALLY RECOGNIZED TRIBE)

By: ____ Date: _____________________

Paula Pechonick
Chief

or

Elected Not to Sign ____ Date ____________________

DRAFT

CONCURRING PARTY

SHAWNEE TRIBE (FEDERALLY RECOGNIZED TRIBE)

By: ____ Date: _____________________

Ron Sparkman
Chairman

or

Elected Not to Sign ____ Date ____________________

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CONCURRING PARTY

BALTIMORE CITY COMMISSION FOR HISTORICAL AND ARCHITECTURAL PRESERVATION

By: ____ Date: _____________________
Eric Holcomb
Executive Director

or

Elected Not to Sign ____ Date ____________________

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CONCURRING PARTY

BALTIMORE CITY PLANNING DEPARTMENT

By: ____ Date: _____________________
Thomas J. Stosur
Director

or

Elected Not to Sign ____ Date ____________________

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CONCURRING PARTY

BALTIMORE CITY DEPARTMENT OF TRANSPORTATION

By: ____ Date: _____________________

Frank Murphy
Acting Director

or

Elected Not to Sign ____ Date ____________________

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CONCURRING PARTY

BALTIMORE HERITAGE

By: ____ Date: _____________________
Johns W. Hopkins
Executive Director

or

Elected Not to Sign ____ Date ____________________

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CONCURRING PARTY

BALTIMORE HERITAGE AREA ASSOCIATION, INC.

By: ____ Date: _____________________
Jeffrey Buchheit
Executive Director

or

Elected Not to Sign ____ Date ____________________

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CONCURRING PARTY

HISTORIC MOUNT ROYAL TERRACE ASSOCIATION

By: ____ Date: _____________________

Greg Grenier
President

or

Elected Not to Sign ____ Date ____________________

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CONCURRING PARTY

MARYLAND COMMISSION ON INDIAN AFFAIRS

By: ____ Date: _____________________
E. Keith Colston
Administrative Director

or

Elected Not to Sign ____ Date ____________________

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CONCURRING PARTY

MARYLAND DEPARTMENT OF TRANSPORTATION

By: ____ Date: ______________________
Peter K. Rahn
Secretary of Transportation

or

Elected Not to Sign ____ Date _____________________

DRAFT

CONCURRING PARTY

MARYLAND TRANSIT ADMINISTRATION

By: ____ Date: _____________________

Paul Comfort, Esq.
Administrator and CEO

or

Elected Not to Sign ____ Date ____________________

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CONCURRING PARTY

MIDTOWN EDMONDSON IMPROVEMENT ASSOCIATION

By: ____Date: ____________________
Zelda Robinson

or

Elected Not to Sign ____ Date ____________________

DRAFT

CONCURRING PARTY

MOUNT ROYAL IMPROVEMENT ASSOCIATION

By: ____ Date: _____________________
Steve Howard
President

or

Elected Not to Sign ____ Date ____________________

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ATTACHMENTS

Attachment 1: Project Location Map

Attachment 2: Overview, Area of Potential Effects and Historic Properties

Attachment 3: Preservation Grant Fund Tier Areas

Attachment 4: List of Prior Technical Studies

Attachment 5: List of Contacts TO BE DETERMINED

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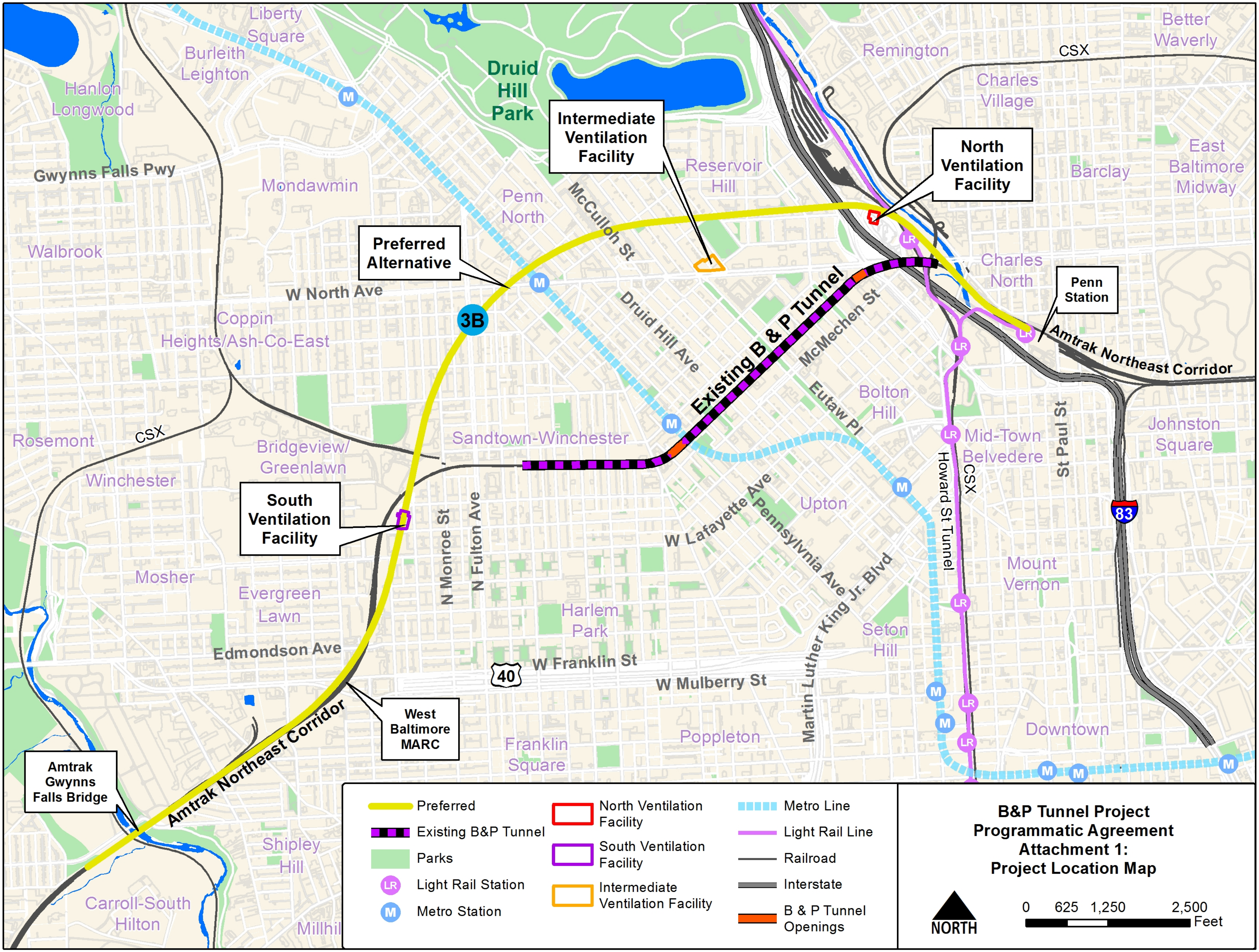
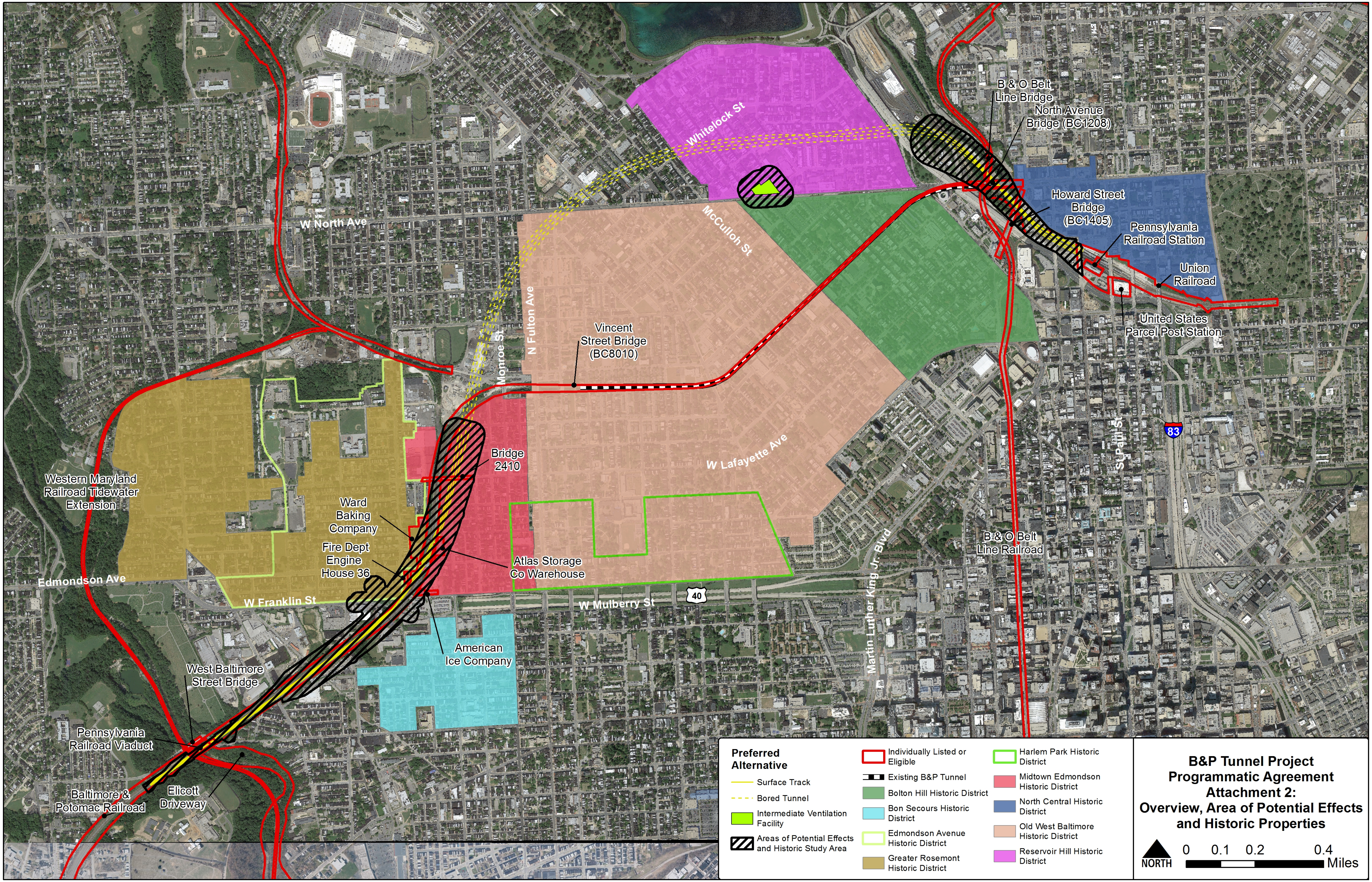
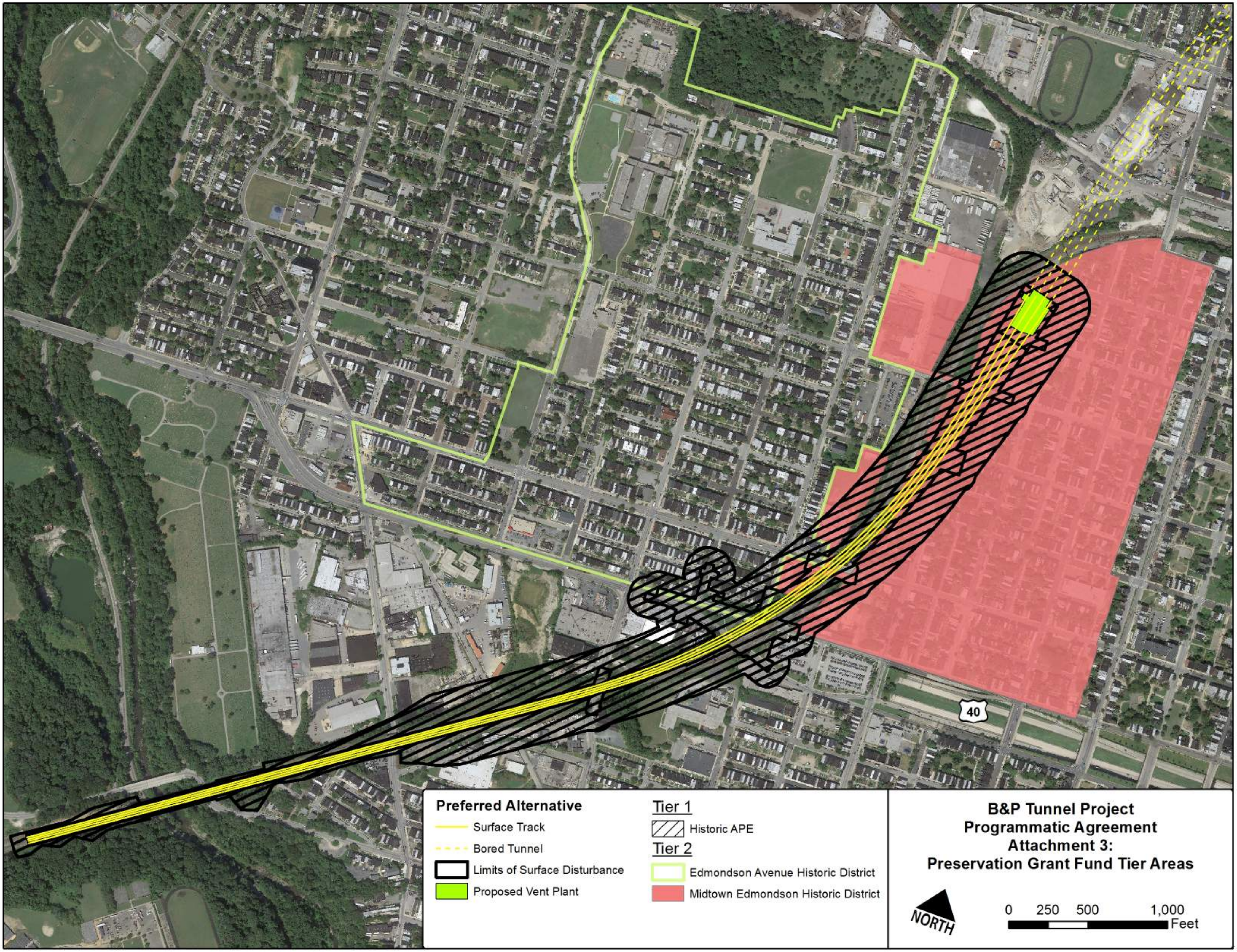


B&P Tunnel Project
Programmatic Agreement
Attachment 1:
Project Location Map

B&P Tunnel Project Programmatic Agreement Attachment 2: Overview, Area of Potential Effects and Historic Properties


Whitelock St
B & O Belt Line Bridge
North Avenue Bridge (BC1208)
W North Ave
McCulloh St
Howard Street Bridge (BC1405)
Pennsylvania Railroad Station
Union Railroad
United States Parcel Post Station
N Fulton Ave
Monroe St
Vincent Street Bridge (BC8010)
W Lafayette Ave
St Paul St
83
Bridge 2410
Western Maryland Railroad Tidewater Extension
Ward Baking Company
Fire Dept Engine House 36
Atlas Storage Co Warehouse
B & O Belt Line Railroad
Edmondson Ave
W Franklin St
W Mulberry St
40
Martin Luther King Jr. Blvd
American Ice Company
West Baltimore Street Bridge
Pennsylvania Railroad Viaduct
Baltimore & Potomac Railroad
Elicott Driveway
Preferred Alternative
Surface Track
Bored Tunnel
Intermediate Ventilation Facility
Areas of Potential Effects and Historic Study Area
Individually Listed or Eligible
Existing B&P Tunnel
Bolton Hill Historic District
Bon Secours Historic District
Edmondson Avenue Historic District
Greater Rosemont Historic District
Harlem Park Historic District
Midtown Edmondson Historic District
North Central Historic District
Old West Baltimore Historic District
Reservoir Hill Historic District
NORTH
0 0.1 0.2 0.4
Miles


B&P Tunnel Project
Programmatic Agreement
Attachment 3:
Preservation Grant Fund Tier Areas
Preferred Alternative
Surface Track
Bored Tunnel
Limits of Surface Disturbance
Proposed Vent Plant
Tier 1
Historic APE
Tier 2
Edmondson Avenue Historic District
Midtown Edmondson Historic District
NORTH
0
250
500
1,000
Feet
40

Attachment 4: List of Prior Technical Studies

Dovetail Cultural Resource Group and Rummel, Klepper & Kahl, LLP

2015 *Architectural Historic Properties Survey*, B&P Tunnel Project, Baltimore, Maryland, October 2015. Prepared for the Federal Railroad Administration. On file, Maryland Historical Trust, Crownsville, Maryland.

2015 Christeen Taniguchi, Project Architectural Historian to Elizabeth Hughes, Acting State Historic Preservation Officer, Addendum, Architectural Historic Properties Survey, Twelve Maryland Historical Trust Determination of Eligibility Forms, Baltimore & Potomac Tunnel Project, September 11, 2015. On file, Maryland Historical Trust, Crownsville, Maryland.

Johnsen, Michael

2016 Michael Johnsen, Lead Environmental Protection Specialist to Elizabeth Hughes, State Historic Preservation Officer, Baltimore and Potomac Railroad Technical Memorandum, Section 106 Update, July 28, 2016. On file, Maryland Historical Trust, Crownsville, Maryland.

Rummel, Klepper & Kahl, LLP

2015 *Phase IA Archeological Survey*, B&P Tunnel Project, Baltimore, Maryland, July 2015, Revised September 2015. Prepared on behalf of Amtrak. On file, Maryland Historical Trust, Crownsville, Maryland.

2015 *Architectural Historic Properties Effects Assessment Report*, B&P Tunnel Project, Baltimore, Maryland, October 2015. Prepared for the Federal Railroad Administration. On file, Maryland Historical Trust, Crownsville, Maryland.

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Appendix I

B&P TUNNEL PROJECT

Draft Environmental Impact Statement Comments and Responses

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department
of Transportation

APPENDIX I: Draft Environmental Impact Statement Comments and Responses (Index)

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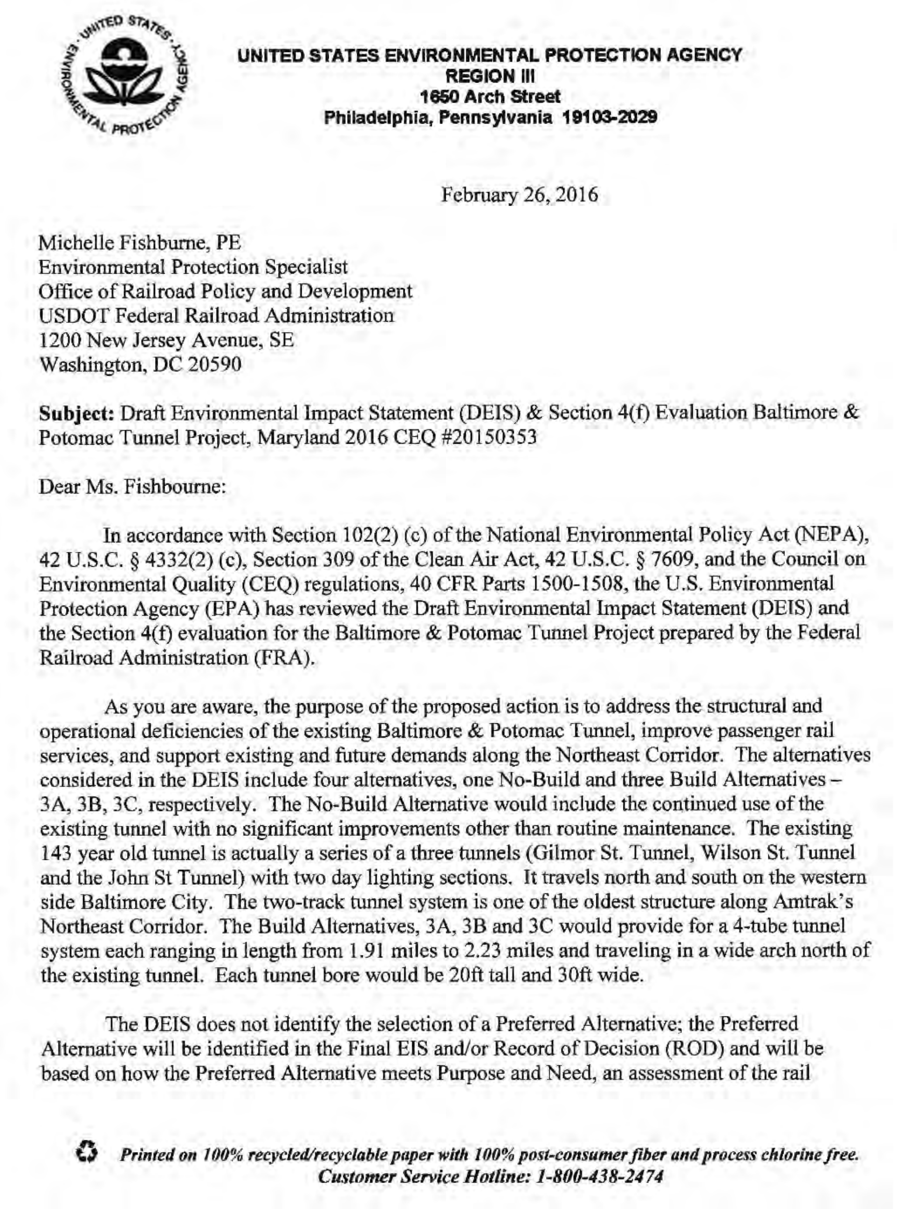
COMMENTS

RESPONSES

AGENCY Comment 1:



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

February 26, 2016

Michelle Fishburne, PE
Environmental Protection Specialist
Office of Railroad Policy and Development
USDOT Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Subject: Draft Environmental Impact Statement (DEIS) & Section 4(f) Evaluation Baltimore & Potomac Tunnel Project, Maryland 2016 CEQ #20150353

Dear Ms. Fishbourne:

In accordance with Section 102(2) (c) of the National Environmental Policy Act (NEPA), 42 U.S.C. § 4332(2) (c), Section 309 of the Clean Air Act, 42 U.S.C. § 7609, and the Council on Environmental Quality (CEQ) regulations, 40 CFR Parts 1500-1508, the U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) and the Section 4(f) evaluation for the Baltimore & Potomac Tunnel Project prepared by the Federal Railroad Administration (FRA).

As you are aware, the purpose of the proposed action is to address the structural and operational deficiencies of the existing Baltimore & Potomac Tunnel, improve passenger rail services, and support existing and future demands along the Northeast Corridor. The alternatives considered in the DEIS include four alternatives, one No-Build and three Build Alternatives – 3A, 3B, 3C, respectively. The No-Build Alternative would include the continued use of the existing tunnel with no significant improvements other than routine maintenance. The existing 143 year old tunnel is actually a series of a three tunnels (Gilmor St. Tunnel, Wilson St. Tunnel and the John St Tunnel) with two day lighting sections. It travels north and south on the western side Baltimore City. The two-track tunnel system is one of the oldest structure along Amtrak's Northeast Corridor. The Build Alternatives, 3A, 3B and 3C would provide for a 4-tube tunnel system each ranging in length from 1.91 miles to 2.23 miles and traveling in a wide arch north of the existing tunnel. Each tunnel bore would be 20ft tall and 30ft wide.

The DEIS does not identify the selection of a Preferred Alternative; the Preferred Alternative will be identified in the Final EIS and/or Record of Decision (ROD) and will be based on how the Preferred Alternative meets Purpose and Need, an assessment of the rail

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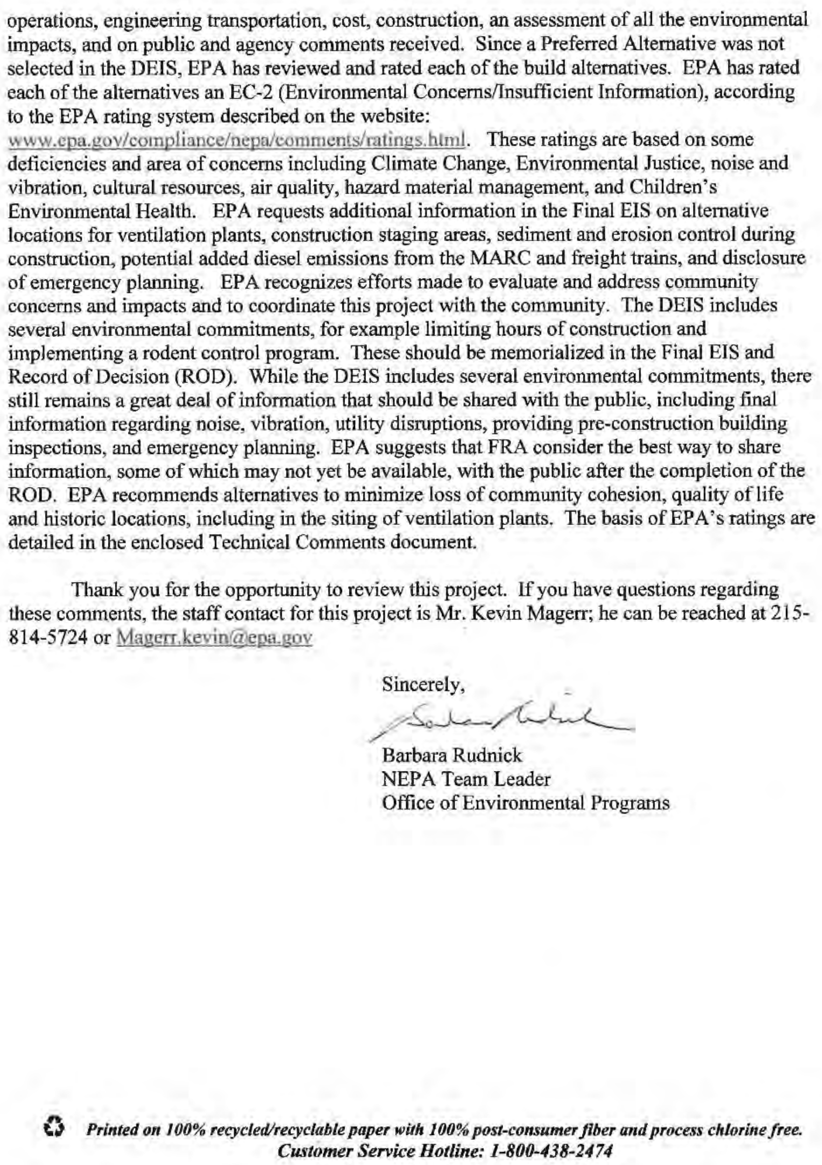
COMMENTS



operations, engineering transportation, cost, construction, an assessment of all the environmental impacts, and on public and agency comments received. Since a Preferred Alternative was not selected in the DEIS, EPA has reviewed and rated each of the build alternatives. EPA has rated each of the alternatives an EC-2 (Environmental Concerns/Insufficient Information), according to the EPA rating system described on the website: www.epa.gov/compliance/nepa/comments/ratings.html. These ratings are based on some deficiencies and area of concerns including Climate Change, Environmental Justice, noise and vibration, cultural resources, air quality, hazard material management, and Children's Environmental Health. EPA requests additional information in the Final EIS on alternative locations for ventilation plants, construction staging areas, sediment and erosion control during construction, potential added diesel emissions from the MARC and freight trains, and disclosure of emergency planning. EPA recognizes efforts made to evaluate and address community concerns and impacts and to coordinate this project with the community. The DEIS includes several environmental commitments, for example limiting hours of construction and implementing a rodent control program. These should be memorialized in the Final EIS and Record of Decision (ROD). While the DEIS includes several environmental commitments, there still remains a great deal of information that should be shared with the public, including final information regarding noise, vibration, utility disruptions, providing pre-construction building inspections, and emergency planning. EPA suggests that FRA consider the best way to share information, some of which may not yet be available, with the public after the completion of the ROD. EPA recommends alternatives to minimize loss of community cohesion, quality of life and historic locations, including in the siting of ventilation plants. The basis of EPA's ratings are detailed in the enclosed Technical Comments document.

Thank you for the opportunity to review this project. If you have questions regarding these comments, the staff contact for this project is Mr. Kevin Magerr; he can be reached at 215-814-5724 or Magerr.kevin@epa.gov

Sincerely,

Barbara Rudnick
NEPA Team Leader
Office of Environmental Programs

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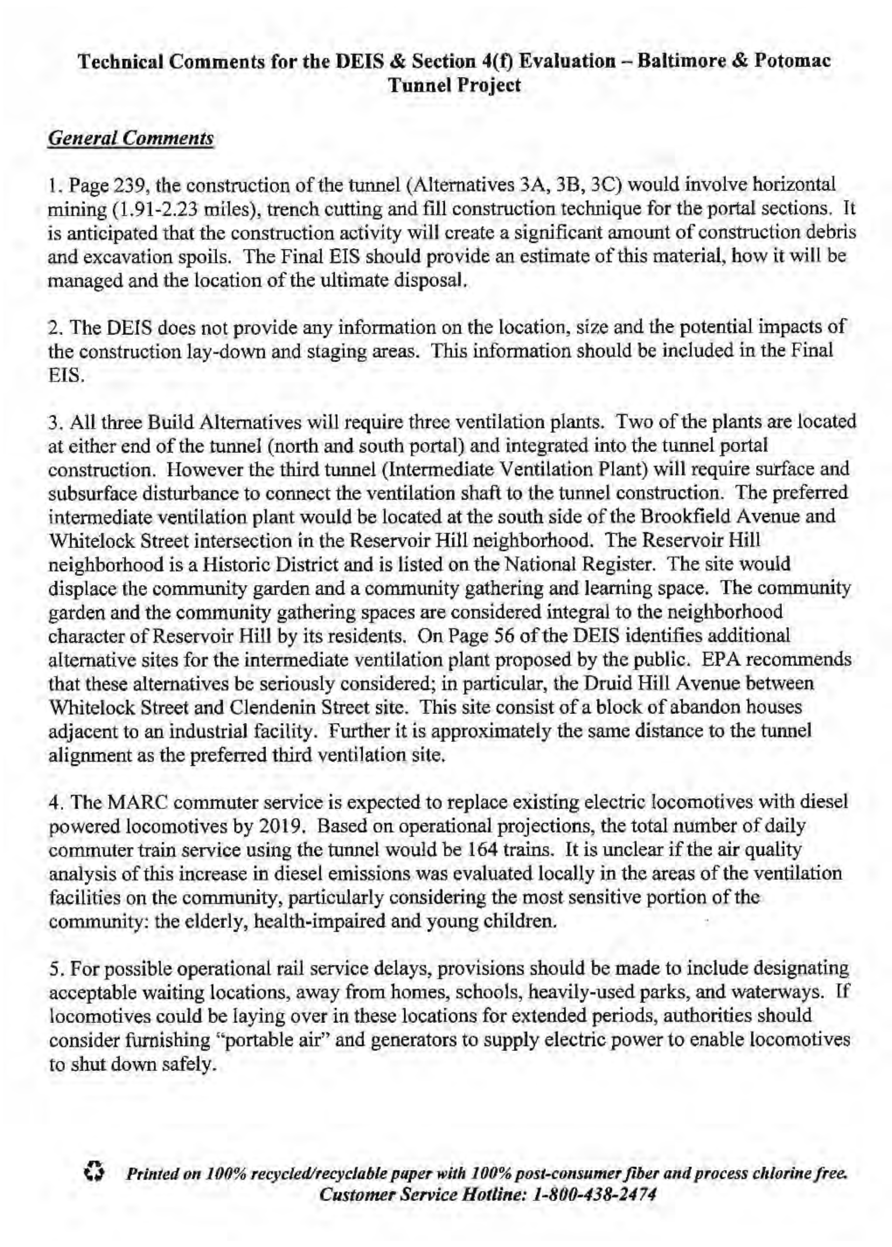
RESPONSES

COMMENTS



Technical Comments for the DEIS & Section 4(f) Evaluation – Baltimore & Potomac Tunnel Project

General Comments

1 1. Page 239, the construction of the tunnel (Alternatives 3A, 3B, 3C) would involve horizontal mining (1.91-2.23 miles), trench cutting and fill construction technique for the portal sections. It is anticipated that the construction activity will create a significant amount of construction debris and excavation spoils. The Final EIS should provide an estimate of this material, how it will be managed and the location of the ultimate disposal.

2 2. The DEIS does not provide any information on the location, size and the potential impacts of the construction lay-down and staging areas. This information should be included in the Final EIS.

3 3. All three Build Alternatives will require three ventilation plants. Two of the plants are located at either end of the tunnel (north and south portal) and integrated into the tunnel portal construction. However the third tunnel (Intermediate Ventilation Plant) will require surface and subsurface disturbance to connect the ventilation shaft to the tunnel construction. The preferred intermediate ventilation plant would be located at the south side of the Brookfield Avenue and Whitelock Street intersection in the Reservoir Hill neighborhood. The Reservoir Hill neighborhood is a Historic District and is listed on the National Register. The site would displace the community garden and a community gathering and learning space. The community garden and the community gathering spaces are considered integral to the neighborhood character of Reservoir Hill by its residents. On Page 56 of the DEIS identifies additional alternative sites for the intermediate ventilation plant proposed by the public. EPA recommends that these alternatives be seriously considered; in particular, the Druid Hill Avenue between Whitelock Street and Clendenin Street site. This site consist of a block of abandon houses adjacent to an industrial facility. Further it is approximately the same distance to the tunnel alignment as the preferred third ventilation site.

4 4. The MARC commuter service is expected to replace existing electric locomotives with diesel powered locomotives by 2019. Based on operational projections, the total number of daily commuter train service using the tunnel would be 164 trains. It is unclear if the air quality analysis of this increase in diesel emissions was evaluated locally in the areas of the ventilation facilities on the community, particularly considering the most sensitive portion of the community: the elderly, health-impaired and young children.

5 5. For possible operational rail service delays, provisions should be made to include designating acceptable waiting locations, away from homes, schools, heavily-used parks, and waterways. If locomotives could be laying over in these locations for extended periods, authorities should consider furnishing "portable air" and generators to supply electric power to enable locomotives to shut down safely.

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RESPONSES

Response to Comment 1:
The total amount of soil and rock to be excavated for the Project is about 47 million cubic feet (1.8 million cubic yards) of material. About 78% of that volume is from the four running tunnels excavated by the Tunnel Boring Machine. The balance comes from shafts, cross passages, cut sections, cut and cover sections, and ventilation plenum tunnels and evacuation tunnels. However, that volume is considered in "bank," or in place. Once excavated from its natural state, the volume increases and is considered "loose" volume. The project will need to dispose of some 70 million cubic feet (2.7 million cubic yards) of material.

The contractor is expected to provide limited on-site storage for the excavated material. Good practice for the construction industry is to provide on-site storage for about one to three days of excavation production. It is most efficient to not double handle the material, but to load it directly into trucks and haul it out. However, sometimes traffic conditions (e.g. an accident) or truck breakdowns as well as limited hours of the day for truck hauling operations means that some on-site storage for excavated material is warranted.

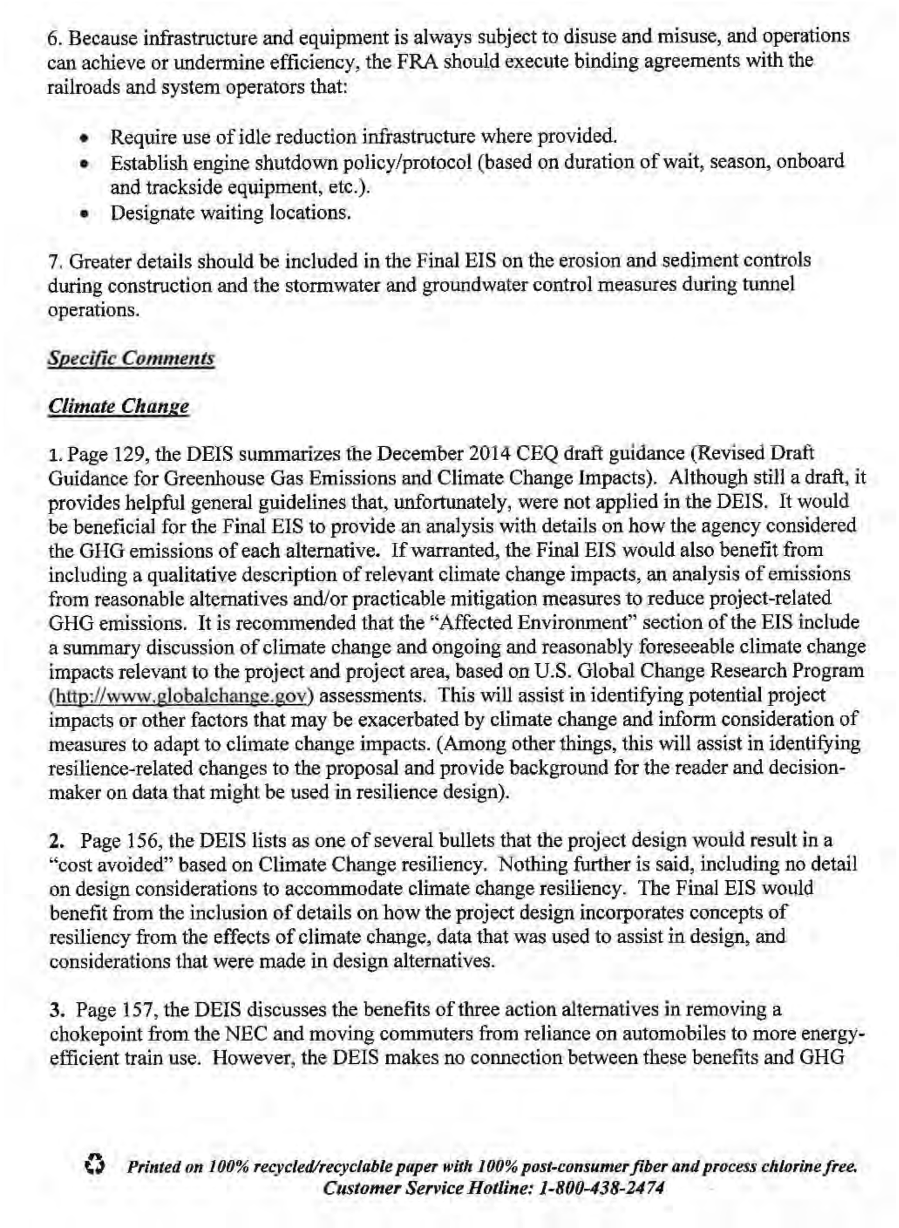
At this early stage of the project, it is too early to identify a selected disposal site(s). On similar projects, disposal of the excavated material is often left up to bidding contractors and market forces. The contractor with a good plan to deal with this issue (e.g. "sell" the material to fill another project) will have the lower bid. Similarly, haul routes will be developed by the construction contractor working with the City of Baltimore DOT to identify the exact route to support the contractor's means and methods. Amtrak would work with FRA to investigate whether any of the tunnel waste material can be transported away from the site by rail, with the goal of minimizing total truck traffic caused by the project.

Chapter VI, Environmental Consequences, provides additional information regarding construction of the Preferred Alternative, including information about disposal needs.

Response to Comment 2:
Chapter VI Section L provides additional information regarding construction of the Build Alternatives, including information about the location and impacts of the staging areas. It is not yet known how large of a staging area is needed, but several acres or more could be required.

Construction staging areas for the Build Alternatives would be located adjacent to the north portal, south portal, and ventilation facilities. Construction staging areas would include facilities such as materials storage and lay down areas, water treatment, parking, power generation, and offices. Construction staging for the south portal and south vent facility would be primarily to the east and west of the proposed trench and cut-and-cover areas, within the limits-of-disturbance and existing Amtrak right-of-way. At the Intermediate Ventilation Facility, construction staging would be confined to the site limits

COMMENTS



6 6. Because infrastructure and equipment is always subject to disuse and misuse, and operations can achieve or undermine efficiency, the FRA should execute binding agreements with the railroads and system operators that:

- Require use of idle reduction infrastructure where provided.
- Establish engine shutdown policy/protocol (based on duration of wait, season, onboard and trackside equipment, etc.).
- Designate waiting locations.

7 7. Greater details should be included in the Final EIS on the erosion and sediment controls during construction and the stormwater and groundwater control measures during tunnel operations.

Specific Comments

Climate Change

8 1. Page 129, the DEIS summarizes the December 2014 CEQ draft guidance (Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts). Although still a draft, it provides helpful general guidelines that, unfortunately, were not applied in the DEIS. It would be beneficial for the Final EIS to provide an analysis with details on how the agency considered the GHG emissions of each alternative. If warranted, the Final EIS would also benefit from including a qualitative description of relevant climate change impacts, an analysis of emissions from reasonable alternatives and/or practicable mitigation measures to reduce project-related GHG emissions. It is recommended that the "Affected Environment" section of the EIS include a summary discussion of climate change and ongoing and reasonably foreseeable climate change impacts relevant to the project and project area, based on U.S. Global Change Research Program (http://www.globalchange.gov) assessments. This will assist in identifying potential project impacts or other factors that may be exacerbated by climate change and inform consideration of measures to adapt to climate change impacts. (Among other things, this will assist in identifying resilience-related changes to the proposal and provide background for the reader and decision-maker on data that might be used in resilience design).

2. Page 156, the DEIS lists as one of several bullets that the project design would result in a "cost avoided" based on Climate Change resiliency. Nothing further is said, including no detail on design considerations to accommodate climate change resiliency. The Final EIS would benefit from the inclusion of details on how the project design incorporates concepts of resiliency from the effects of climate change, data that was used to assist in design, and considerations that were made in design alternatives.

3. Page 157, the DEIS discusses the benefits of three action alternatives in removing a chokepoint from the NEC and moving commuters from reliance on automobiles to more energy-efficient train use. However, the DEIS makes no connection between these benefits and GHG

RESPONSES

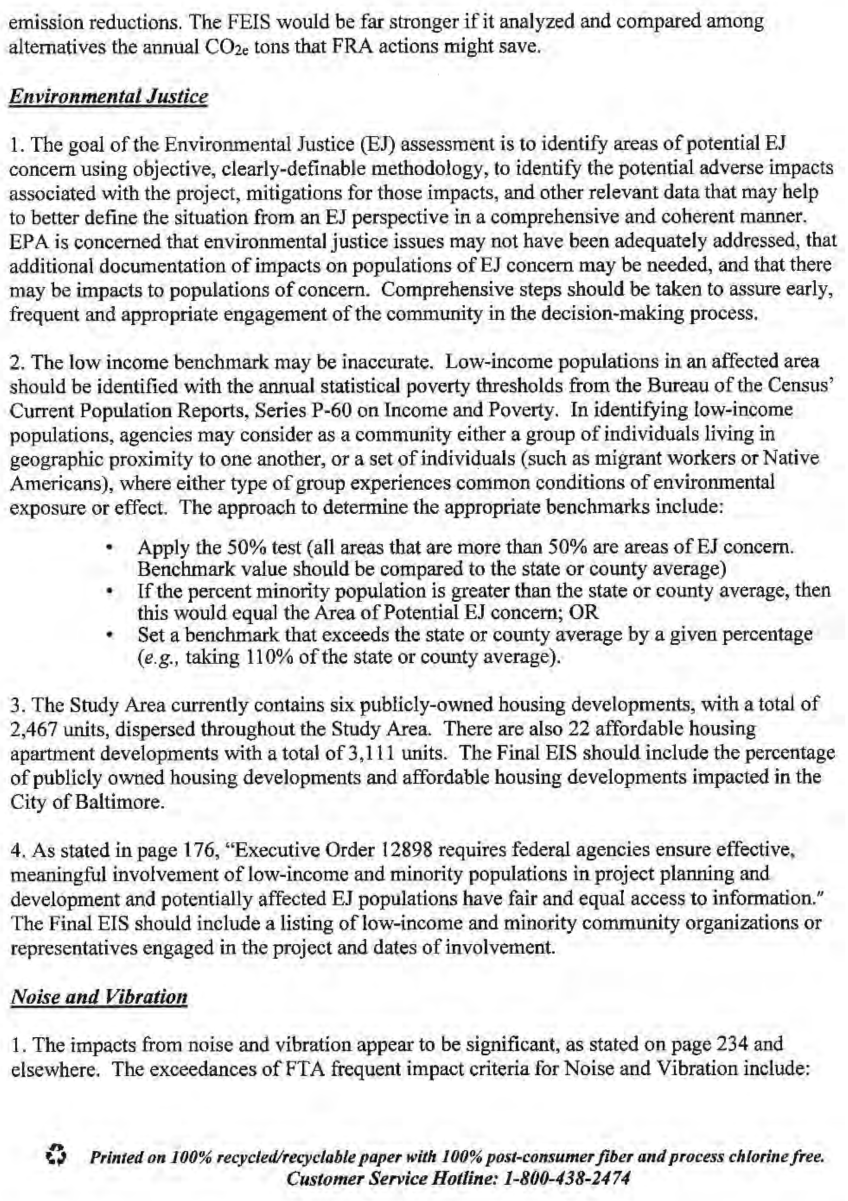
identified in **Chapter III** and **Chapter IV**. The north portal construction staging area would be located between the existing light rail tracks and the Jones Falls waterway, in the vicinity of the North Avenue, Howard Street, and CSX Bridges over Jones Falls. Construction staging for the north vent facility would occur within the I-83 loop ramp area, currently in use as a BCDOT facility.

Response to Comment 3:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Placing the Intermediate Ventilation Facility on Druid Hill Avenue was explored during the creation of the DEIS. Specifically, the Team considered Druid Hill Avenue between Cloverdale Road and Retreat Street, as well as between Whitelock Street and Clendenin Street. These sites were not considered further due to their distance from the optimal location for a ventilation facility near the tunnel alignment. For more information, please see **Chapter III**.

Response to Comment 4:
As stated in the comment, the total number of daily commuter train service using the tunnel would be 164 trains. **Chapter IV, Section H** contains an operational emissions analysis that takes into consideration future diesel emissions (including from projected increase in diesel-powered MARC trains). The table below displays this information:

COMMENTS



emission reductions. The FEIS would be far stronger if it analyzed and compared among alternatives the annual CO_{2e} tons that FRA actions might save.

Environmental Justice

9 1. The goal of the Environmental Justice (EJ) assessment is to identify areas of potential EJ concern using objective, clearly-definable methodology, to identify the potential adverse impacts associated with the project, mitigations for those impacts, and other relevant data that may help to better define the situation from an EJ perspective in a comprehensive and coherent manner. EPA is concerned that environmental justice issues may not have been adequately addressed, that additional documentation of impacts on populations of EJ concern may be needed, and that there may be impacts to populations of concern. Comprehensive steps should be taken to assure early, frequent and appropriate engagement of the community in the decision-making process.

2. The low income benchmark may be inaccurate. Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect. The approach to determine the appropriate benchmarks include:

- Apply the 50% test (all areas that are more than 50% are areas of EJ concern. Benchmark value should be compared to the state or county average)
- If the percent minority population is greater than the state or county average, then this would equal the Area of Potential EJ concern; OR
- Set a benchmark that exceeds the state or county average by a given percentage (*e.g.*, taking 110% of the state or county average).

3. The Study Area currently contains six publicly-owned housing developments, with a total of 2,467 units, dispersed throughout the Study Area. There are also 22 affordable housing apartment developments with a total of 3,111 units. The Final EIS should include the percentage of publicly owned housing developments and affordable housing developments impacted in the City of Baltimore.

4. As stated in page 176, "Executive Order 12898 requires federal agencies ensure effective, meaningful involvement of low-income and minority populations in project planning and development and potentially affected EJ populations have fair and equal access to information." The Final EIS should include a listing of low-income and minority community organizations or representatives engaged in the project and dates of involvement.

Noise and Vibration

10 1. The impacts from noise and vibration appear to be significant, as stated on page 234 and elsewhere. The exceedances of FTA frequent impact criteria for Noise and Vibration include:

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RESPONSES

Diesel Locomotive Emissions (2040)

Scenario	CO	VOC	NO_x	PM_{10}	$PM_{2.5}$
2040 No Build Alternative	8.6	0.3	6.7	0.1	0.1
2040 Build Alternatives	19.4	0.6	15.2	0.2	0.2
Net Increase	**10.9**	**0.3**	**8.5**	**0.1**	**0.1**
De Minimis Threshold	--	50	100	--	100
Below *De Minimis*?	**--**	**Yes**	**Yes**	**--**	**Yes**

Notes: De Minimis thresholds do not apply within an area in attainment for that specific pollutant. The Project is in an attainment area for CO and PM_{10}.
Values of "Net Increase" subject to rounding. All values in table rounded to the nearest 0.1 tons.
USEPA does not provide any SO2 or SOx emissions factors (see *Emission Factors for Locomotives,* EPA-420-F-09-025, April 2009); furthermore, the project is in an attainment area for SOx.

As shown in the table above, the build alternatives would have no net increase in operational emissions exceeding applicable *de minimis* thresholds. The build alternatives would result in no projected increase in diesel freight train operations, and no significant air emissions would be generated by electric locomotive trains (e.g., Amtrak). Net increases in emissions would be due to diesel MARC trains. The No-Build and build alternatives' diesel emissions were estimated based upon emissions factors provided by the EPA (EPA, 2009). As shown in the table, the MARC equipment and operational changes would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between the 2040 No-Build and the 2040 build alternatives scenarios would be below the *de minimis* levels.

The increase in diesel emissions was evaluated for impacts on the local community, which is comprised of environmental justice populations. The Ventilation System Analysis contained in **Chapter VI, Section H** is a hot spot analysis of diesel emissions. Please see this chapter and associated tables for more information.

Response to Comment 5:
Long idling times at stations due to construction-related delays are not anticipated to occur, but mitigation measures will be considered during final design if applicable.

Response to Comment 6:
This is beyond the purview of this FEIS.

Response to Comment 7:
Information regarding erosion and sediment controls as well as stormwater and groundwater control measures are included in **Chapter VI** and **Chapter VII**. The Preferred Alternative will include the development and implementation of a Stormwater Management Plan in accordance with MDE guidelines. The plan will focus on stormwater

COMMENTS

- Alternative 3A - Noise 215 residences, Vibrations 69 residences
- Alternative 3B – Noise 303 residences, Vibration 138 residences
- Alternative 3C – Noise 265 residences, Vibration 92 residences

10 2. It is unclear in the DEIS what the impacts of noise and vibration are during construction, how the communities will be informed and what mitigation measures will be implemented.

3. EPA suggest the following noise and vibration preventative and mitigation measures:

- Where practicable, schedule individual project construction activities to avoid or minimize adverse impacts. Consider using noise barriers, including temporary barriers, semi-permanent barriers, noise curtains, and/or noise tents. Consider using vibration reducing techniques or mitigation measures.
- Coordinate construction activities with projects under construction in adjacent and nearby locations to avoid or minimize impacts.
- Consider condition of surrounding buildings, structures, infrastructure, and utilities, where appropriate. Consider whether any special protection is needed for historic properties.
- Prepare contingency measures in the event established limits are exceeded. Consider steps to avoid generating noise/vibration from cumulative operations that may exceed noise limits.
- Consider establishing a public communication plan in order to keep the public informed and attempt to reduce public frustration. This plan could include regular public meetings, emails, a hotline, and other notices.
- Consider whether a noise technician/acoustical engineer is needed during peak construction phases.
- Consider restricting the use of certain types of equipment during noise/vibration-sensitive hours. Consider restricting night work all together.

Cultural Resources

11 1. Page ES 6, Table 2: Summary of Potential Engineering and Environmental Impacts provides a clear and concise summary of the impacts for the action alternatives (3A, 3B, 3C) and the No-build Alternative. It is evident from this chart and the Cultural Resources sections of the DEIS that of the build alternatives, Alternative 3A is the alternative with the least cultural resources/Section 4(f) properties impact (as well as environmental and community impacts) in comparison with the other two action alternatives (3B and 3C) as summarized below.

	Alternative 3A	Alternative 3B	Alternative 3C
Adverse Effects for Historic Properties	6 (6 contributing historic elements impacted)	8 (87 contributing historic elements impacted)	10 (132 contributing historic elements impacted)
Area of Surface Disturbance within	12.0 acres	12.0 acres	20.3 acres

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RESPONSES

runoff associated with construction activities and surface impacts, both temporary and permanent, throughout the study area. As the Project advances beyond 10% design and toward 30% design, the management of stormwater will be developed in greater detail. Planned mitigation efforts to reduce stormwater impacts include potentially greening vacant lots, adding landscaping and street trees within a half mile of the alignment, and adding vegetative buffers along the northeast corridor of the Study Area. The Preferred Alternative will also include development and implementation of an Erosion and Sediment Control Plan for construction activities.

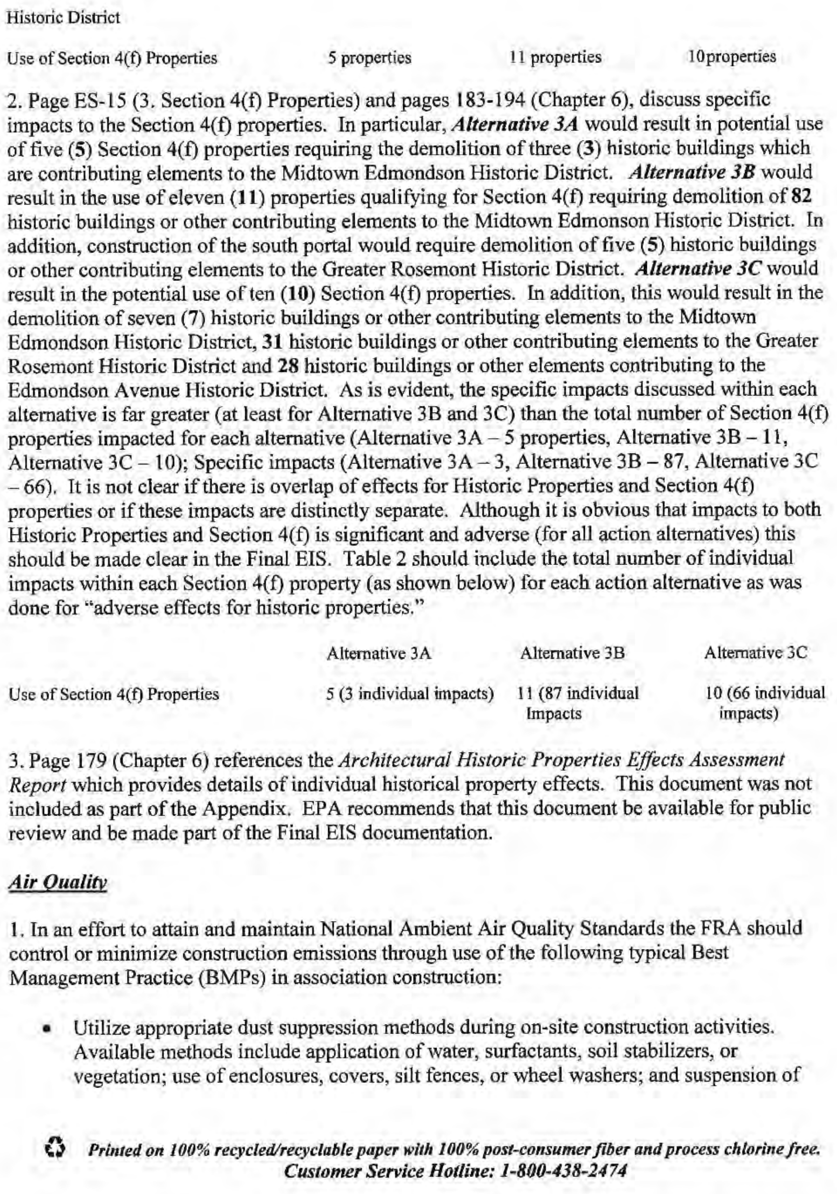
Groundwater will be managed during both construction and operation of the tunnels. During construction a closed face machine will install segmented concrete waterproof linings. There is low likelihood of experiencing significant groundwater during construction. During operation, there will be an internal drainage system which will pump out water.

Response to Comment 8: Climate Change
The guidance provided by the CEQ addressing the ways that Federal agencies can improve their consideration of the effects of GHG emissions and climate change in their evaluation of proposals for Federal actions under NEPA was finalized on 8/1/16. Please see **Chapter VI** for a discussion of GHG emissions of the Build alternatives compared to Alternative 1: No-Build. Please see **Chapter V, Section E** for a summary discussion of climate change impacts relevant to the Study Area. The Project Team did consider impacts related to resiliency, specifically the impacts of rainfall and flooding on the Project. The Jones Falls might experience flooding, and the North Portal is located within the floodplain. Modelling indicates that the portal would be inundated in a major storm event. The tunnels are being designed to have storm doors. Sub-stations are also being considered for potential flooding impacts.

Chapter VI describes removing a chokepoint from the NEC. The section acknowledges that, as operations become more efficient, environmental benefits are generated through the avoidance of emissions and through energy savings, and includes a brief discussion of GHG emissions of the Build condition compared to Alternative 1: No-Build. However, the data for this Project was insufficient to quantify the specific emission reductions from moving commuters from reliance on automobiles to more energy-efficient train use.

Response to Comment 9: Environmental Justice
Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of Transportation's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

COMMENTS



Historic District			
Use of Section 4(f) Properties	5 properties	11 properties	10properties

11 2. Page ES-15 (3. Section 4(f) Properties) and pages 183-194 (Chapter 6), discuss specific impacts to the Section 4(f) properties. In particular, ***Alternative 3A*** would result in potential use of five (**5**) Section 4(f) properties requiring the demolition of three (**3**) historic buildings which are contributing elements to the Midtown Edmondson Historic District. ***Alternative 3B*** would result in the use of eleven (**11**) properties qualifying for Section 4(f) requiring demolition of **82** historic buildings or other contributing elements to the Midtown Edmonson Historic District. In addition, construction of the south portal would require demolition of five (**5**) historic buildings or other contributing elements to the Greater Rosemont Historic District. ***Alternative 3C*** would result in the potential use of ten (**10**) Section 4(f) properties. In addition, this would result in the demolition of seven (**7**) historic buildings or other contributing elements to the Midtown Edmondson Historic District, **31** historic buildings or other contributing elements to the Greater Rosemont Historic District and **28** historic buildings or other elements contributing to the Edmondson Avenue Historic District. As is evident, the specific impacts discussed within each alternative is far greater (at least for Alternative 3B and 3C) than the total number of Section 4(f) properties impacted for each alternative (Alternative 3A – 5 properties, Alternative 3B – 11, Alternative 3C – 10); Specific impacts (Alternative 3A – 3, Alternative 3B – 87, Alternative 3C – 66). It is not clear if there is overlap of effects for Historic Properties and Section 4(f) properties or if these impacts are distinctly separate. Although it is obvious that impacts to both Historic Properties and Section 4(f) is significant and adverse (for all action alternatives) this should be made clear in the Final EIS. Table 2 should include the total number of individual impacts within each Section 4(f) property (as shown below) for each action alternative as was done for "adverse effects for historic properties."

	Alternative 3A	Alternative 3B	Alternative 3C
Use of Section 4(f) Properties	5 (3 individual impacts)	11 (87 individual Impacts	10 (66 individual impacts)

3. Page 179 (Chapter 6) references the *Architectural Historic Properties Effects Assessment Report* which provides details of individual historical property effects. This document was not included as part of the Appendix. EPA recommends that this document be available for public review and be made part of the Final EIS documentation.

Air Quality

12 1. In an effort to attain and maintain National Ambient Air Quality Standards the FRA should control or minimize construction emissions through use of the following typical Best Management Practice (BMPs) in association construction:

- Utilize appropriate dust suppression methods during on-site construction activities. Available methods include application of water, surfactants, soil stabilizers, or vegetation; use of enclosures, covers, silt fences, or wheel washers; and suspension of

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RESPONSES

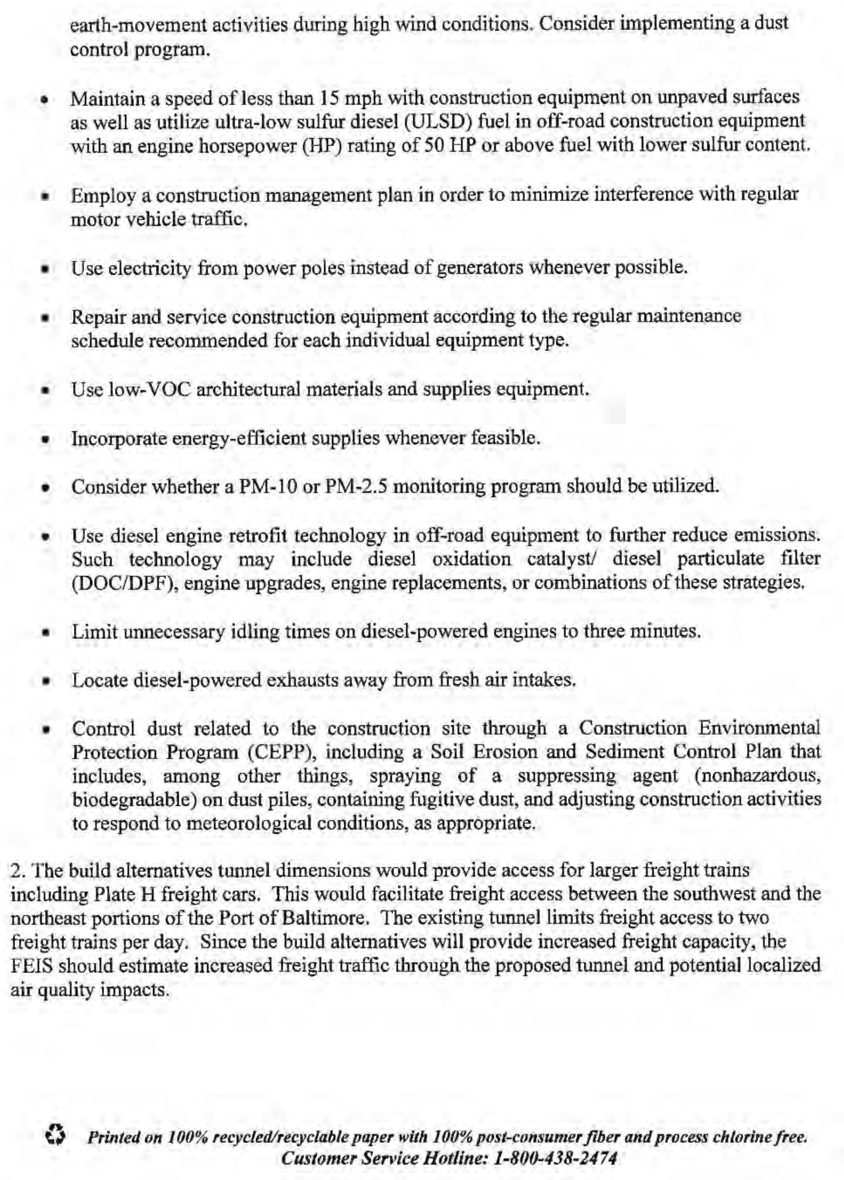
The B&P Project Team has performed an Environmental Justice (EJ) analysis consistent with EO 12898 and subsequent USDOT Orders. A critical component of the EO on environmental justice is public outreach. The Project Team has engaged extensively with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held with local officials; public, local, and regional organizations; government agencies; and representatives of affected EJ communities along the evaluated alternative alignment. Three public open houses and ten community meetings were held where the public was given the opportunity to learn about the Project development in-person, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings. Additionally, the Project Team attended meetings at the request of the following organizations: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter Claver Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School.

Direct mailings to residents in the Study Area included property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The Project website continues to post meeting notices, Project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship, and other organizations.

The Project Team studied community composition in the areas affected by the build alternatives. It reviewed data from the American Community Survey 2009-2013 for minority and low-income populations, the National Center for Educational Statistics, government-assisted housing programs, historical references, city officials, field visits, and community meetings. From this information, the Project Team learned that of the 77 Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS.

Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations. For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A

COMMENTS



earth-movement activities during high wind conditions. Consider implementing a dust control program.

12

- Maintain a speed of less than 15 mph with construction equipment on unpaved surfaces as well as utilize ultra-low sulfur diesel (ULSD) fuel in off-road construction equipment with an engine horsepower (HP) rating of 50 HP or above fuel with lower sulfur content.
- Employ a construction management plan in order to minimize interference with regular motor vehicle traffic.
- Use electricity from power poles instead of generators whenever possible.
- Repair and service construction equipment according to the regular maintenance schedule recommended for each individual equipment type.
- Use low-VOC architectural materials and supplies equipment.
- Incorporate energy-efficient supplies whenever feasible.
- Consider whether a PM-10 or PM-2.5 monitoring program should be utilized.
- Use diesel engine retrofit technology in off-road equipment to further reduce emissions. Such technology may include diesel oxidation catalyst/ diesel particulate filter (DOC/DPF), engine upgrades, engine replacements, or combinations of these strategies.
- Limit unnecessary idling times on diesel-powered engines to three minutes.
- Locate diesel-powered exhausts away from fresh air intakes.
- Control dust related to the construction site through a Construction Environmental Protection Program (CEPP), including a Soil Erosion and Sediment Control Plan that includes, among other things, spraying of a suppressing agent (nonhazardous, biodegradable) on dust piles, containing fugitive dust, and adjusting construction activities to respond to meteorological conditions, as appropriate.

2. The build alternatives tunnel dimensions would provide access for larger freight trains including Plate H freight cars. This would facilitate freight access between the southwest and the northeast portions of the Port of Baltimore. The existing tunnel limits freight access to two freight trains per day. Since the build alternatives will provide increased freight capacity, the FEIS should estimate increased freight traffic through the proposed tunnel and potential localized air quality impacts.

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RESPONSES

would displace no residential buildings, and Alternative 3C would displace 12 residential buildings.

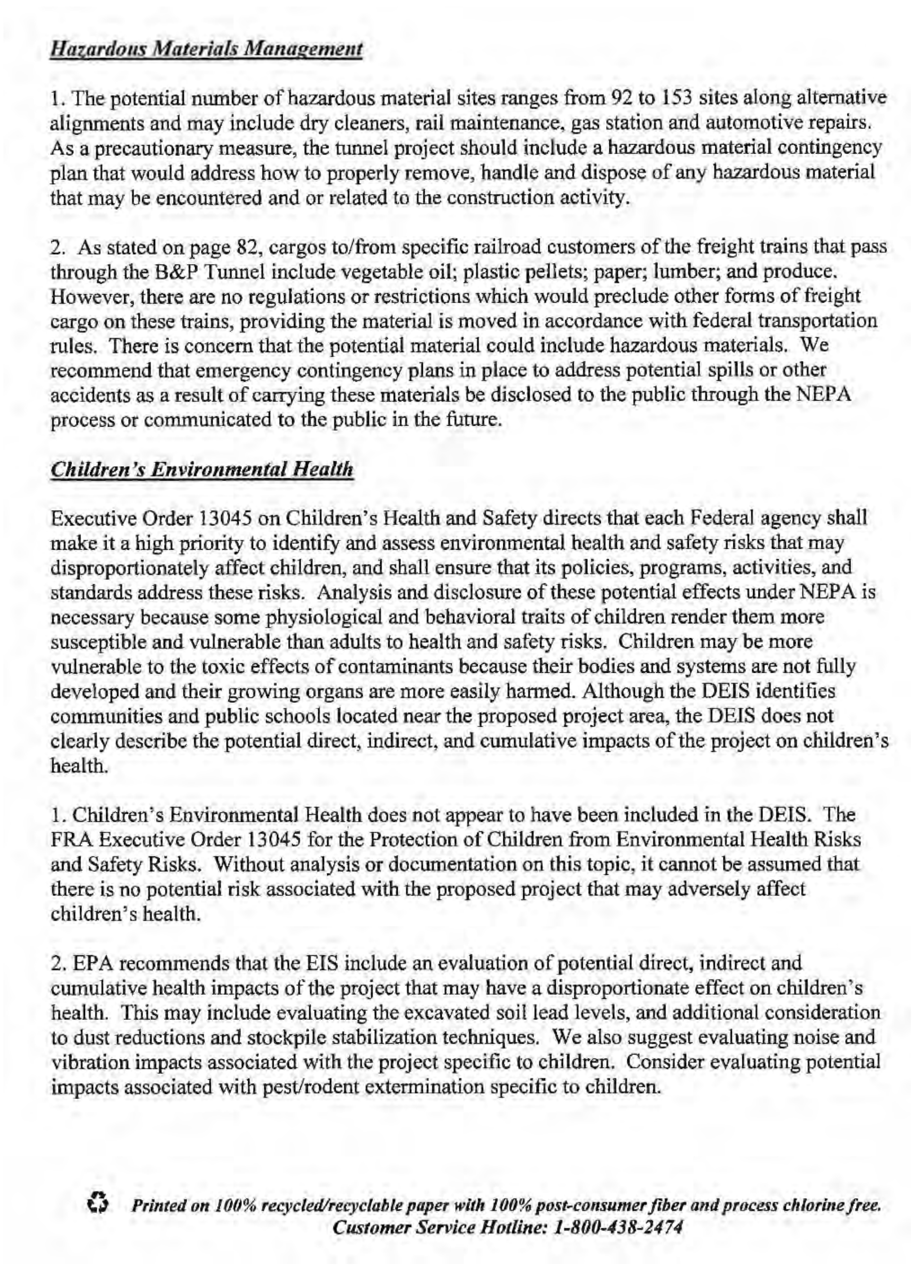
As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project sponsor will be underground which would reduce the overall impact to the communities. The Project will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project sponsor will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

The value provided in the FEIS is the weighted average poverty threshold in 2013 for a family of four as per the September 2014 "Income and Poverty in the United States: 2013" report (P60-249). Regarding methodology, we have used guidance from the CEQ 1997 and from US DOT orders. The resulting analysis indicates that 74 of 77 Block Groups within the Study Area meet criteria for EJ populations. We believe we have adequately captured where environmental justice populations reside within the Study Area. For more information, please refer to **Chapter VI, Section A.**

Chapter V, Section A includes information on housing. The Study Area currently contains six publicly-owned housing developments, with a total of 2,467 units, dispersed throughout the Study Area. There are also 22 affordable housing apartment developments with a total of 3,111 units. Seven of these developments provide family housing, 12 serve the elderly, and two provide disabled housing. One development is not classified (HABC, Accessed 2014). According to the Housing Authority of Baltimore City website, "with an inventory of approximately 11,000 units, the Housing Authority of Baltimore City's (HABC) portfolio includes 28 family developments, 19 mixed population buildings, 2 senior buildings and scattered sites throughout the City" (baltimorehousing.org). The 2,467 units of publicly-owned housing in the Study Area represents roughly 3% of all publicly-owned housing in the city. According to affordable housing information obtained from the HUD Affordable Apartment search, the 22 affordable housing apartment developments in Baltimore City represent roughly 5% of the total 112 affordable housing apartment developments in Baltimore City.

As stated above, the Project Team has engaged extensively with the community throughout the development of the Project. For more details, please see **Chapter VIII**.

COMMENTS



Hazardous Materials Management

13 1. The potential number of hazardous material sites ranges from 92 to 153 sites along alternative alignments and may include dry cleaners, rail maintenance, gas station and automotive repairs. As a precautionary measure, the tunnel project should include a hazardous material contingency plan that would address how to properly remove, handle and dispose of any hazardous material that may be encountered and or related to the construction activity.

2. As stated on page 82, cargos to/from specific railroad customers of the freight trains that pass through the B&P Tunnel include vegetable oil; plastic pellets; paper; lumber; and produce. However, there are no regulations or restrictions which would preclude other forms of freight cargo on these trains, providing the material is moved in accordance with federal transportation rules. There is concern that the potential material could include hazardous materials. We recommend that emergency contingency plans in place to address potential spills or other accidents as a result of carrying these materials be disclosed to the public through the NEPA process or communicated to the public in the future.

Children's Environmental Health

14 Executive Order 13045 on Children's Health and Safety directs that each Federal agency shall make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, and shall ensure that its policies, programs, activities, and standards address these risks. Analysis and disclosure of these potential effects under NEPA is necessary because some physiological and behavioral traits of children render them more susceptible and vulnerable than adults to health and safety risks. Children may be more vulnerable to the toxic effects of contaminants because their bodies and systems are not fully developed and their growing organs are more easily harmed. Although the DEIS identifies communities and public schools located near the proposed project area, the DEIS does not clearly describe the potential direct, indirect, and cumulative impacts of the project on children's health.

1. Children's Environmental Health does not appear to have been included in the DEIS. The FRA Executive Order 13045 for the Protection of Children from Environmental Health Risks and Safety Risks. Without analysis or documentation on this topic, it cannot be assumed that there is no potential risk associated with the proposed project that may adversely affect children's health.

2. EPA recommends that the EIS include an evaluation of potential direct, indirect and cumulative health impacts of the project that may have a disproportionate effect on children's health. This may include evaluating the excavated soil lead levels, and additional consideration to dust reductions and stockpile stabilization techniques. We also suggest evaluating noise and vibration impacts associated with the project specific to children. Consider evaluating potential impacts associated with pest/rodent extermination specific to children.

RESPONSES

Response to Comment 10: Noise and Vibration
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in reductions in impacts, including to noise and vibration. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Information regarding estimated vibrations and noise impacts during operation is as follows:

From the FEIS Evaluation Matrix: Estimated Noise and Vibration Impacts During Operation

Criterion	Measure	Alt 1	Alt 3A	Alt 3B	Alt 3C
Estimated Number of Buildings with Potential Noise Impacts	# of Buildings, Moderate or Severe	0 Severe 0 Moderate	0 Severe 254 Moderate	141 Severe 297 Moderate	111 Severe 979 Moderate
Estimated Number of Sites with Potential Vibration Impacts	# of Sites	0 Vibration 12 Ground-Borne Noise	0 Vibration 156 Ground-Borne Noise	0 Vibration 449 Ground-Borne Noise	0 Vibration 168 Ground-Borne Noise

During construction, both noise and vibration will be mitigated, and the public will be notified of construction as per information in **Chapter VI**.

Alternative 3A is estimated to have 254 Moderate noise impacts, Alternative 3 B is estimated to have 141 Severe and 296 Moderate noise impacts, and Alternative 3C is estimated to have 111 Severe and 979 Moderate noise impacts. The severe impacts were predicted at residential areas nearest the railroad between the West Baltimore station and the south portal. The duration of the construction period will be six years; 2020 to 2025. Measures will be implemented to lessen noise during construction, which could potentially include erection of temporary walls or earth berms between the noise source and the sensitive receptor, the identification of haul routes that avoid sensitive receptors to the maximum extent possible, and location of stationary noise generating equipment at a distance from sensitive receptors. In addition, construction activities can be planned to avoid prolonged noise generating activities and to minimize construction activities during the most sensitive time of day or night. **Chapter VI** of this FEIS further details noise construction mitigation.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA

COMMENTS

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Transit Noise and Vibration Impact Assessment and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

Response to Comment 11: Cultural Resources
Since publication of the DEIS, Alternative 3B was advanced through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies

COMMENTS

RESPONSES

Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the selection of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

Chapter VI, Section D provides detailed information on Section 4(f) Impacts to each of the alternatives, including Alternative 3B, the Preferred Alternative. The table below indicates specific impacts.

Overview of Section 4(f) Impacts

Alternative	**Alternative 3A**	**Alternative 3B - Preferred**	**Alternative 3C**
Section 4(f) Properties	4 (use) (+3 No Use) (+2 De Minimis)	8 (use) (+1 No Use) (+3 De Minimis)	9 (use) (+1 No Use) (+2 De Minimis)
Use	• B&O Belt Line Railroad • B&O Belt Line Bridge • Bridge 2410 • Midtown-Edmondson Historic District (1 demolition, 1 other)	• B&O Belt Line Railroad • B&O Belt Line Bridge • B&P Railroad • Bridge 2410 • Midtown-Edmondson Historic District (27 demolitions, 8 other) • Greater Rosemont Historic District (5 demolitions, 15 other) • Edmonson Avenue Historic District (2 demolitions, 13 other) • Atlas Storage Co	• B&O Belt Line Railroad • B&O Belt Line Bridge • B&P Railroad • Bridge 2410 • Midtown-Edmondson Historic District (5 demolitions, 2 other) • Greater Rosemont Historic District (17 demolitions, 35 other) • Edmonson Avenue Historic District (12 demolitions, 35 other) • Fire Company 36 • Ward Baking Co
De Minimis	• Union Railroad • B&P Railroad	• Fire Company 36 • Ward Baking Co • Union Railroad	• Western Maryland Railroad • Union Railroad
Total Contribut-ing*	2 Total 1 Demolition	53 Total 30 Demolitions	57 Total 18 Demolitions

Note: does not include intermediate ventilation plant

*Number of historic resources contributing to historic districts. Note that some buildings contribute to multiple historic districts.

Additional information can be found in **Chapter VII**.

COMMENTS	RESPONSES
	The Architectural Historic Properties Effects Assessment Report will be posted on the B&P Tunnel Project website. **Response to Comment 12: Air Quality** The Preferred Alternative includes development and implementation of a construction emissions reduction plan, which includes measures such as reducing equipment idling times, utilizing on-site storage to reduce truck haul trips, using low-emissions equipment, dust suppression measures, ensuring the contractor has knowledge of appropriate fugitive dust and equipment exhaust controls, and other measures. Dust control measures will be in conformance with COMAR 26.11.06.03D pertaining to Particulate Matter from Materials Handling and Construction and may include application of water and calcium chloride to haul roads, provision of truck wheel wash stands, minimization of exposed, erosion prone areas to the greatest extent possible; stabilization of exposed earth with grass, geotextile fabric, ground cover, paving, or other finished surface as easily as possible; and covering or shielding stockpiled materials from wind. Additional information regarding air quality consequences and mitigation can be found in **Chapter VI** and **Chapter VII**. The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. The combination of these variables makes it virtually impossible to accurately forecast freight usage. Variability of freight traffic is further described in **Chapter V.** While it is not possible to accurately forecast future freight rail traffic, it is possible to roughly estimate the order of magnitude of growth in freight traffic that would result in exceeding the applicable de minimis thresholds for NO_x and $PM_{2.5}$. This rough estimate assumes that regional freight trains would use six locomotives, local freight trains would use two locomotives, each locomotive would have the same emissions profile as a diesel passenger train locomotive, and that freight locomotives would move at approximately 30 mph through the tunnels. Based on these assumptions, every ten additional freight trains would emit approximately the equivalent diesel emissions of 104 additional diesel passenger trains. Ultimately, to exceed the de-minimis thresholds for NO_x and $PM_{2.5}$ in the

COMMENTS

RESPONSES

vicinity of the Intermediate Ventilation Facility one would need to assume a market for, and the track and signal capacity sufficient to accommodate, approximately thirty-four times more freight traffic than currently operates through the existing tunnel. This would be about 68 freight trains daily, in addition to the two that occur now. The NEC cannot accommodate that many additional freight trains under any signal-control scenario, and it is unlikely that there is market for, or available equipment sufficient to operate, that much additional service in the greater Baltimore area.

Response to Comment 13: Hazardous Materials Management

The Project sponsor will develop and implement a Hazardous Spill Prevention Plan and a Hazardous Materials Remediation Plan, as well as an Emergency Management Plan, to be implemented in the event of a tunnel emergency.

Norfolk Southern (NS) has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

Additional information on hazardous material management can be found in **Chapter VI**.

Response to Comment 14: Children's Health

Children's Health was assessed for Air Quality, Water, Soil and Hazardous Material and is described in **Chapter VI** of this FEIS. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no

COMMENTS

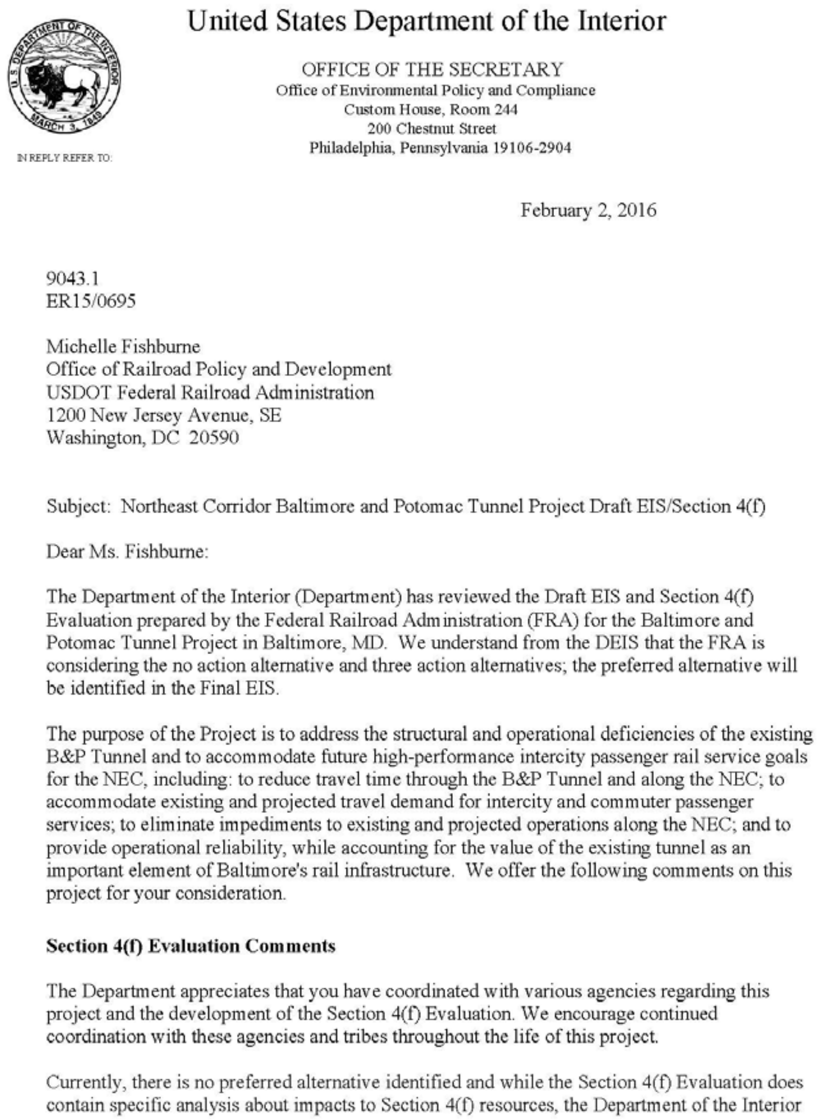
RESPONSES

significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA. No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water. Under the Preferred Alternative, 112 sites of concern were identified within 1 mile of the alignment; once type and extent of contamination and details of construction are known, potential risk and exposure can be assessed and appropriate documentation in place.

COMMENTS

RESPONSES

AGENCY Comment 2:



United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Custom House, Room 244
200 Chestnut Street
Philadelphia, Pennsylvania 19106-2904

IN REPLY REFER TO:

February 2, 2016

9043.1
ER15/0695

Michelle Fishburne
Office of Railroad Policy and Development
USDOT Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Subject: Northeast Corridor Baltimore and Potomac Tunnel Project Draft EIS/Section 4(f)

Dear Ms. Fishburne:

The Department of the Interior (Department) has reviewed the Draft EIS and Section 4(f) Evaluation prepared by the Federal Railroad Administration (FRA) for the Baltimore and Potomac Tunnel Project in Baltimore, MD. We understand from the DEIS that the FRA is considering the no action alternative and three action alternatives; the preferred alternative will be identified in the Final EIS.

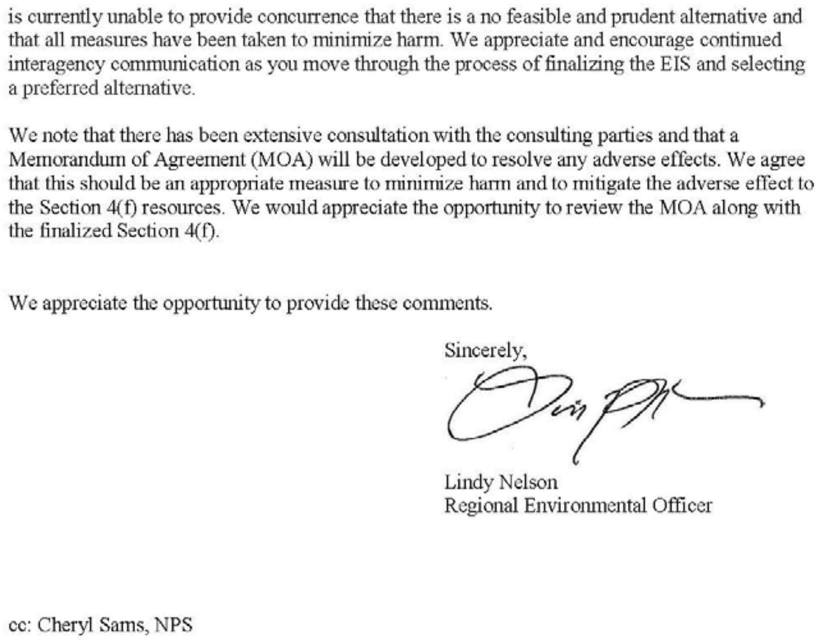
The purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, including: to reduce travel time through the B&P Tunnel and along the NEC; to accommodate existing and projected travel demand for intercity and commuter passenger services; to eliminate impediments to existing and projected operations along the NEC; and to provide operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure. We offer the following comments on this project for your consideration.

Section 4(f) Evaluation Comments

The Department appreciates that you have coordinated with various agencies regarding this project and the development of the Section 4(f) Evaluation. We encourage continued coordination with these agencies and tribes throughout the life of this project.

Currently, there is no preferred alternative identified and while the Section 4(f) Evaluation does contain specific analysis about impacts to Section 4(f) resources, the Department of the Interior

COMMENTS



is currently unable to provide concurrence that there is a no feasible and prudent alternative and that all measures have been taken to minimize harm. We appreciate and encourage continued interagency communication as you move through the process of finalizing the EIS and selecting a preferred alternative.

1 We note that there has been extensive consultation with the consulting parties and that a Memorandum of Agreement (MOA) will be developed to resolve any adverse effects. We agree that this should be an appropriate measure to minimize harm and to mitigate the adverse effect to the Section 4(f) resources. We would appreciate the opportunity to review the MOA along with the finalized Section 4(f).

We appreciate the opportunity to provide these comments.

Sincerely,

Lindy Nelson
Regional Environmental Officer

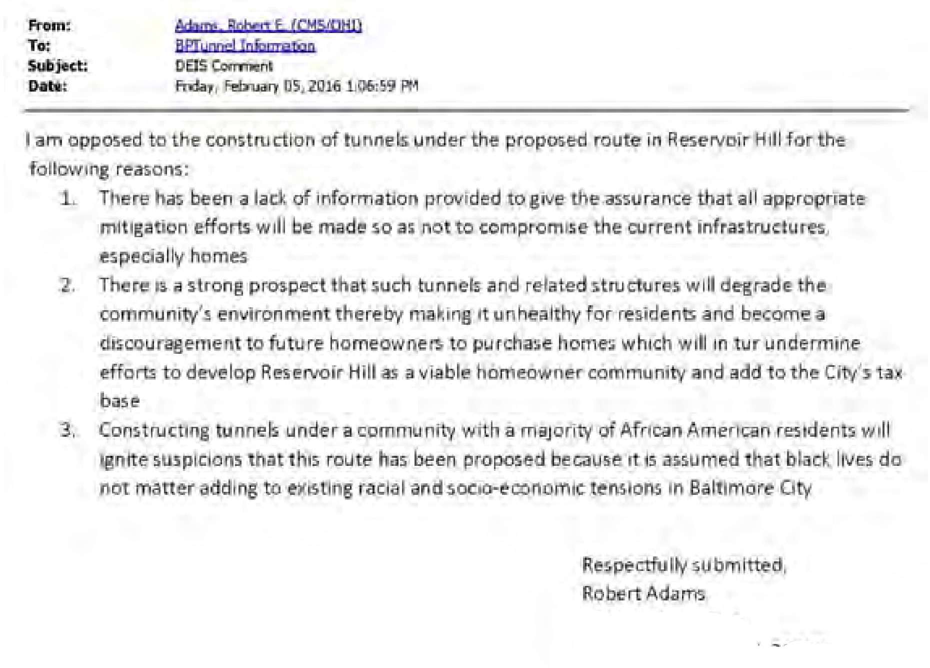
cc: Cheryl Sams, NPS

RESPONSES

Response to Comment 1:
The Memorandum of Agreement (MOA) has been replaced with the Programmatic Agreement. Please reference FEIS **Appendix H.**

COMMENTS

DEIS Comment 1:



From: Adams, Robert E. (CMS/DHI)
To: BPTunnel Information
Subject: DEIS Comment
Date: Friday, February 05, 2016 1:06:59 PM

I am opposed to the construction of tunnels under the proposed route in Reservoir Hill for the following reasons:

1 1. There has been a lack of information provided to give the assurance that all appropriate mitigation efforts will be made so as not to compromise the current infrastructures, especially homes

2 2. There is a strong prospect that such tunnels and related structures will degrade the community's environment thereby making it unhealthy for residents and become a discouragement to future homeowners to purchase homes which will in tur undermine efforts to develop Reservoir Hill as a viable homeowner community and add to the City's tax base

3 3. Constructing tunnels under a community with a majority of African American residents will ignite suspicions that this route has been proposed because it is assumed that black lives do not matter adding to existing racial and socio-economic tensions in Baltimore City

Respectfully submitted,
Robert Adams

RESPONSES

Response to Comment 1:
The Project Team has engaged in extensive public outreach throughout the development of the Project, including three public open houses and ten community meetings where the public was given the opportunity to learn about the Project and engage in discussion with the Project Team. In addition to these meetings, the Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS. Additional details of this outreach are described in **Chapter VI**, as well as **Chapter VIII.**

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

Response to Comment 2:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

COMMENTS

RESPONSES

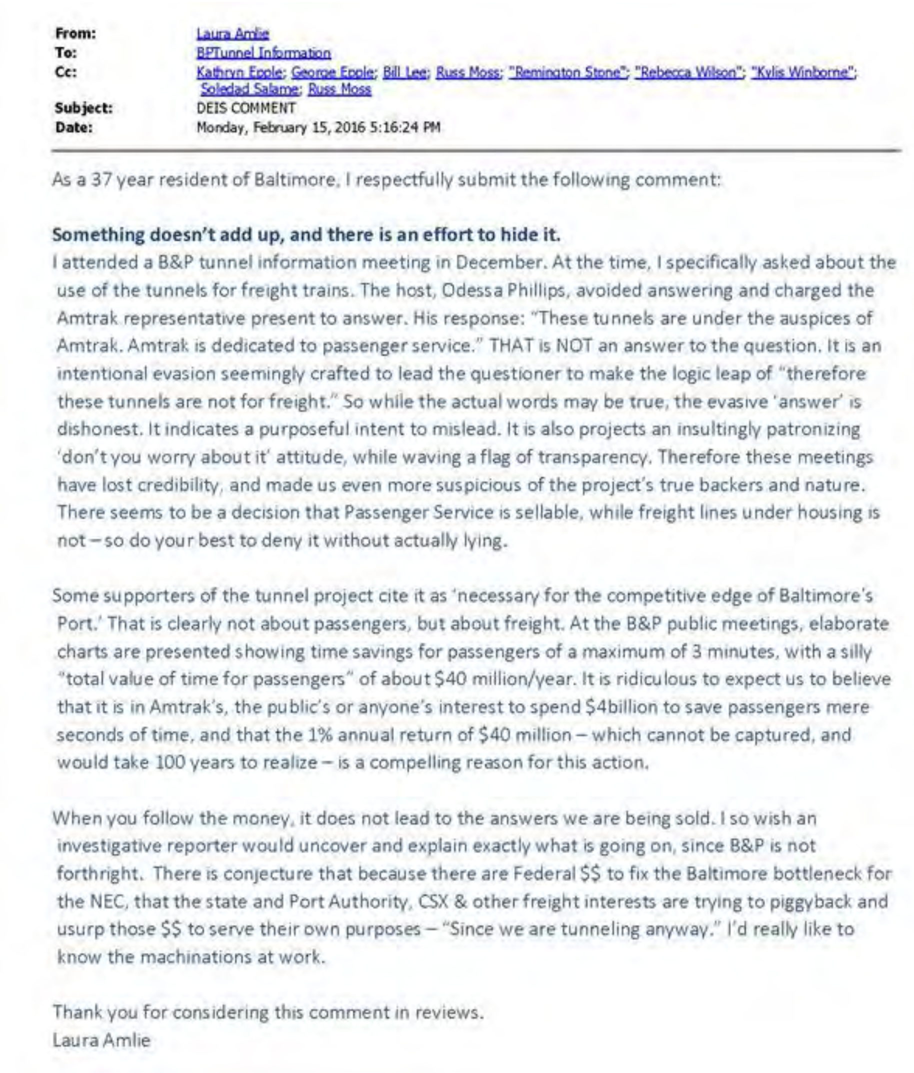
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Response to Comment 3:
The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

COMMENTS

DEIS Comment 2:



From: Laura Amlie
To: BPTunnel Information
Cc: Kathryn Epple; George Epple; Bill Lee; Russ Moss; "Remington Stone"; "Rebecca Wilson"; "Kylis Winborne"; Soledad Salame; Russ Moss
Subject: DEIS COMMENT
Date: Monday, February 15, 2016 5:16:24 PM

As a 37 year resident of Baltimore, I respectfully submit the following comment:

Something doesn't add up, and there is an effort to hide it.

1 I attended a B&P tunnel information meeting in December. At the time, I specifically asked about the use of the tunnels for freight trains. The host, Odessa Phillips, avoided answering and charged the Amtrak representative present to answer. His response: "These tunnels are under the auspices of Amtrak. Amtrak is dedicated to passenger service." THAT is NOT an answer to the question. It is an intentional evasion seemingly crafted to lead the questioner to make the logic leap of "therefore these tunnels are not for freight." So while the actual words may be true, the evasive 'answer' is dishonest. It indicates a purposeful intent to mislead. It is also projects an insultingly patronizing 'don't you worry about it' attitude, while waving a flag of transparency. Therefore these meetings have lost credibility, and made us even more suspicious of the project's true backers and nature. There seems to be a decision that Passenger Service is sellable, while freight lines under housing is not – so do your best to deny it without actually lying.

2 Some supporters of the tunnel project cite it as 'necessary for the competitive edge of Baltimore's Port.' That is clearly not about passengers, but about freight. At the B&P public meetings, elaborate charts are presented showing time savings for passengers of a maximum of 3 minutes, with a silly "total value of time for passengers" of about $40 million/year. It is ridiculous to expect us to believe that it is in Amtrak's, the public's or anyone's interest to spend $4billion to save passengers mere seconds of time, and that the 1% annual return of $40 million – which cannot be captured, and would take 100 years to realize – is a compelling reason for this action.

When you follow the money, it does not lead to the answers we are being sold. I so wish an investigative reporter would uncover and explain exactly what is going on, since B&P is not forthright. There is conjecture that because there are Federal $$ to fix the Baltimore bottleneck for the NEC, that the state and Port Authority, CSX & other freight interests are trying to piggyback and usurp those $$ to serve their own purposes – "Since we are tunneling anyway." I'd really like to know the machinations at work.

Thank you for considering this comment in reviews.
Laura Amlie

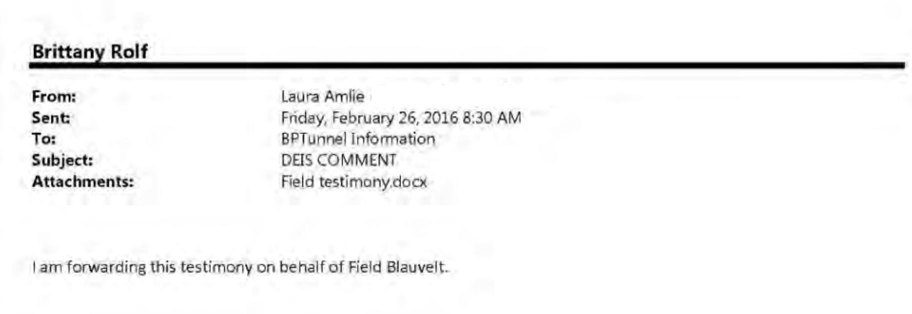
RESPONSES

Response to Comment 1:
The primary purpose of the Project is to address structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the Northeast Corridor (NEC). However, the build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project.

While no increase in freight traffic is planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel would change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, and market forces on rail transported materials such as coal (which represents 20-25 percent of total railroad car loads), crude oil/crude industrials sands, and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V**.

Response to Comment 2:
While reducing travel time through the B&P Tunnel is one of several goals of the Project, it is not the reason that the Project was initiated. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

COMMENTS



Brittany Rolf

From: Laura Amlie
Sent: Friday, February 26, 2016 8:30 AM
To: BPTunnel Information
Subject: DEIS COMMENT
Attachments: Field testimony.docx

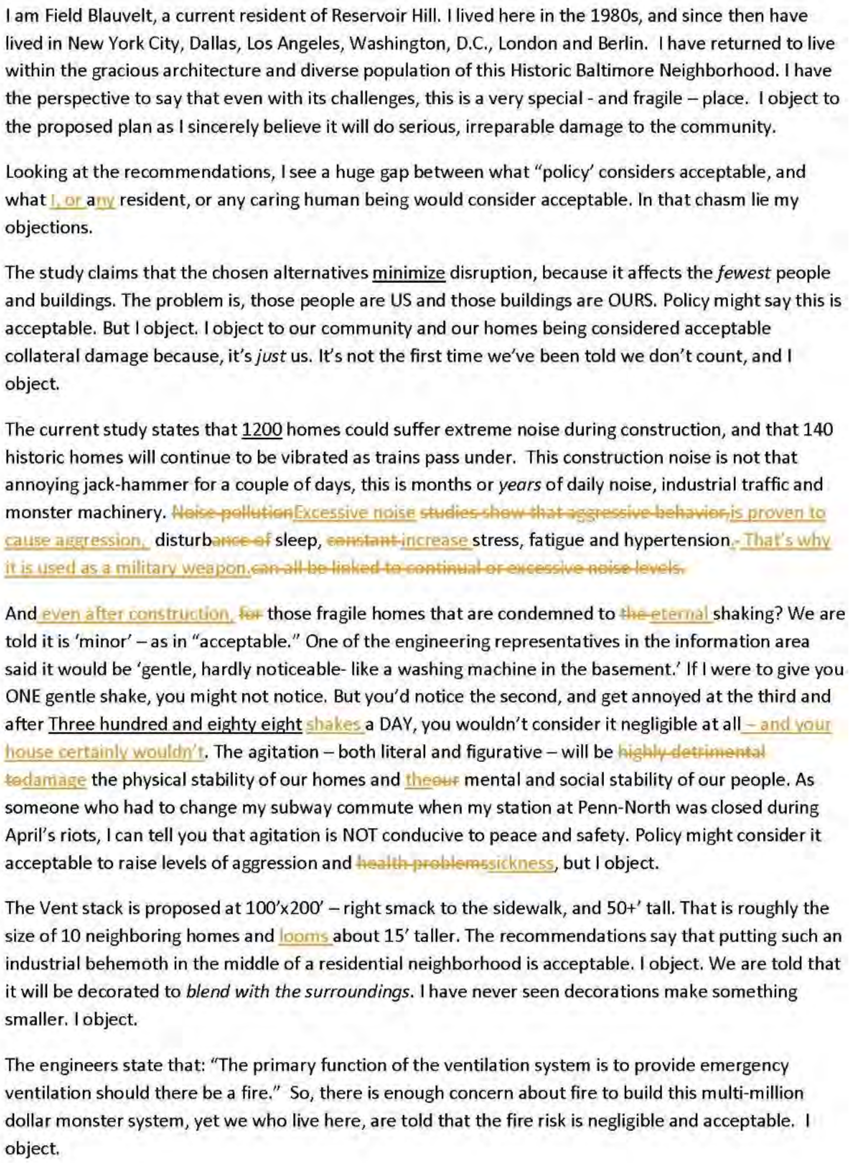
I am forwarding this testimony on behalf of Field Blauvelt.

RESPONSES

Please see responses to the testimony of Field Blauvelt on the next page.

COMMENTS

DEIS Comment 3:



1 I am Field Blauvelt, a current resident of Reservoir Hill. I lived here in the 1980s, and since then have lived in New York City, Dallas, Los Angeles, Washington, D.C., London and Berlin. I have returned to live within the gracious architecture and diverse population of this Historic Baltimore Neighborhood. I have the perspective to say that even with its challenges, this is a very special - and fragile – place. I object to the proposed plan as I sincerely believe it will do serious, irreparable damage to the community.

Looking at the recommendations, I see a huge gap between what "policy' considers acceptable, and what I, or any resident, or any caring human being would consider acceptable. In that chasm lie my objections.

2 The study claims that the chosen alternatives minimize disruption, because it affects the *fewest* people and buildings. The problem is, those people are US and those buildings are OURS. Policy might say this is acceptable. But I object. I object to our community and our homes being considered acceptable collateral damage because, it's *just* us. It's not the first time we've been told we don't count, and I object.

3 The current study states that 1200 homes could suffer extreme noise during construction, and that 140 historic homes will continue to be vibrated as trains pass under. This construction noise is not that annoying jack-hammer for a couple of days, this is months or *years* of daily noise, industrial traffic and monster machinery. ~~Noise pollution~~Excessive noise ~~studies show that aggressive behavior,~~is proven to cause aggression, disturb~~ance of~~ sleep, ~~constant~~ increase stress, fatigue and hypertension. That's why it is used as a military weapon.~~can all be linked to continual or excessive noise levels.~~

4 And even after construction, ~~for~~ those fragile homes that are condemned to ~~the~~ eternal shaking? We are told it is 'minor' – as in "acceptable." One of the engineering representatives in the information area said it would be 'gentle, hardly noticeable- like a washing machine in the basement.' If I were to give you ONE gentle shake, you might not notice. But you'd notice the second, and get annoyed at the third and after Three hundred and eighty eight shakes a DAY, you wouldn't consider it negligible at all – and your house certainly wouldn't. The agitation – both literal and figurative – will be ~~highly detrimental to~~damage the physical stability of our homes and the~~our~~ mental and social stability of our people. As someone who had to change my subway commute when my station at Penn-North was closed during April's riots, I can tell you that agitation is NOT conducive to peace and safety. Policy might consider it acceptable to raise levels of aggression and ~~health problems~~sickness, but I object.

5 The Vent stack is proposed at 100'x200' – right smack to the sidewalk, and 50+' tall. That is roughly the size of 10 neighboring homes and looms about 15' taller. The recommendations say that putting such an industrial behemoth in the middle of a residential neighborhood is acceptable. I object. We are told that it will be decorated to *blend with the surroundings*. I have never seen decorations make something smaller. I object.

6 The engineers state that: "The primary function of the ventilation system is to provide emergency ventilation should there be a fire." So, there is enough concern about fire to build this multi-million dollar monster system, yet we who live here, are told that the fire risk is negligible and acceptable. I object.

RESPONSES

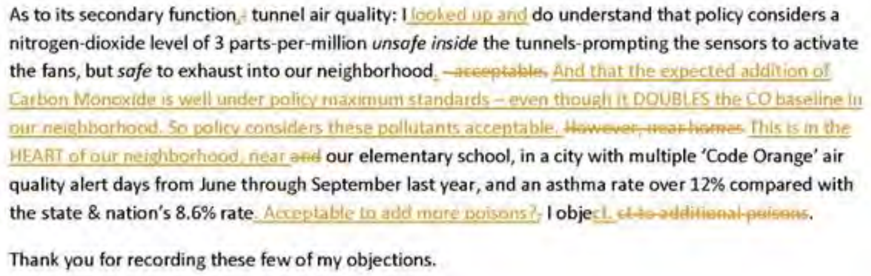
Response to Comment 1:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

Response to Comment 2:
The Preferred Alternative would displace 22 residential buildings in the Midtown-Edmondson neighborhood, Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings. Executive Order 12898 requires federal agencies to ensure effective, meaningful involvement of low-income and minority populations in project planning and development, and potentially affected EJ populations have fair and equal access to information. The Project Team has engaged in extensive public outreach throughout the development of the Project, including three public open houses and ten community meetings. In addition to these meetings, Mitigation Working Groups comprised of community organization representatives and members of the Project Team were established to determine the most effective mitigation for the Project. Details of this outreach are described in **Chapter VI** and **Chapter VIII**.

Response to Comment 3:
Alternative 3A is estimated to have 254 Moderate noise impacts, Alternative 3 B is estimated to have 141 Severe and 296 Moderate noise impacts, and Alternative 3C is estimated to have 111 Severe and 979 Moderate noise impacts. The severe impacts were predicted at residential areas nearest the railroad between the West Baltimore station and the south portal. The duration of the construction period will be six years; 2020 to 2025. Measures will be implemented to lessen noise during construction, which could potentially include erection of temporary walls or earth berms between the noise source and the sensitive receptor, the identification of haul routes that avoid sensitive receptors to the maximum extent possible, and location of stationary noise generating equipment at a distance from sensitive receptors. In addition, construction activities can be planned to avoid prolonged noise generating activities and to minimize construction activities during the most sensitive time of day or night. **Chapter VI** of this FEIS further details noise construction mitigation.

COMMENTS



6 As to its secondary function, ~~-~~ tunnel air quality: I looked up and do understand that policy considers a nitrogen-dioxide level of 3 parts-per-million *unsafe inside* the tunnels-prompting the sensors to activate the fans, but *safe* to exhaust into our neighborhood. ~~– acceptable.~~ And that the expected addition of Carbon Monoxide is well under policy maximum standards – even though it DOUBLES the CO baseline in our neighborhood. So policy considers these pollutants acceptable. ~~However, near homes.~~ This is in the HEART of our neighborhood, near ~~and~~ our elementary school, in a city with multiple 'Code Orange' air quality alert days from June through September last year, and an asthma rate over 12% compared with the state & nation's 8.6% rate. Acceptable to add more poisons? ~~-~~ I object. ~~ct to additional poisons~~.

Thank you for recording these few of my objections.

RESPONSES

Regarding concerns for the impact of vibration on historic homes, the Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area, which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, and would include sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest.

Response to Comment 4:

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation

COMMENTS

RESPONSES

Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

Response to Comment 5:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

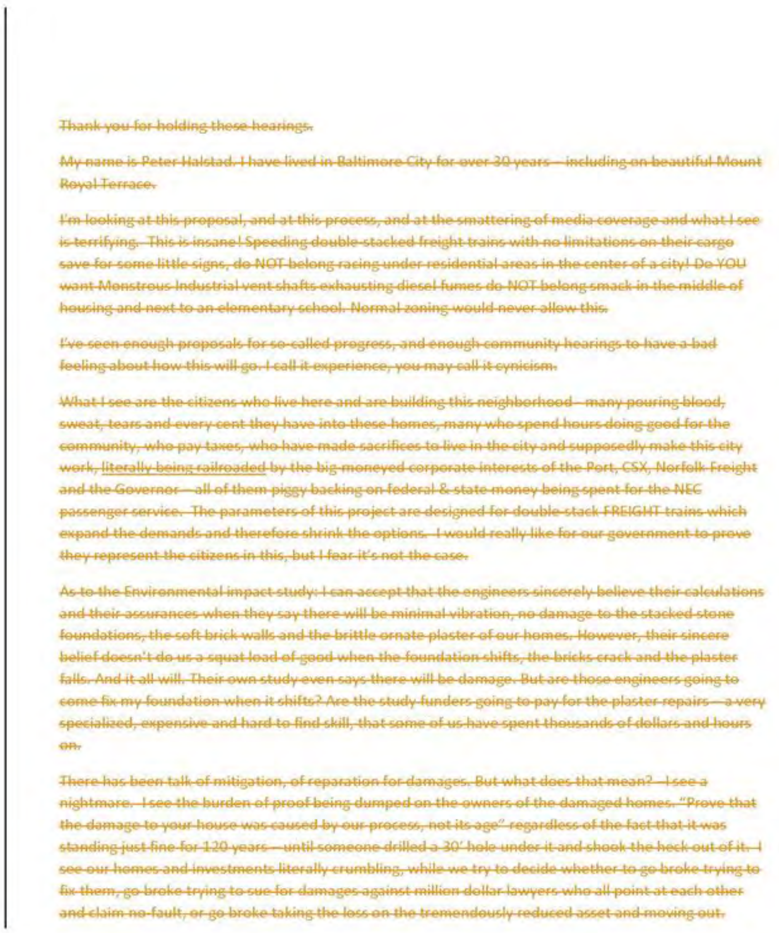
Response to Comment 6:
The tunnel must be constructed to meet current standards for fire The Project sponsor will develop an Emergency Management Plan to be implemented in the event of a tunnel emergency.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality; emissions would fall within all acceptable federal air quality standards. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, which have been set to safeguard public health. Because the concentrations of NO_2 were modeled to be within acceptable levels, all other criteria pollutant concentrations would be within NAAQS, as NOx is the most strictly regulated air pollutant generated from diesel locomotive operation. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

Regarding concerns for siting the ventilation facility near the elementary school, **Chapter VI** of this FEIS specifically reviewed air quality, water, soil and hazardous material impacts on Children's Health. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of $NO_{x,}$ VOC, and $PM_{2.5}$ between 2040 No-

COMMENTS	RESPONSES
	Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation facilities would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

COMMENTS



~~Thank you for holding these hearings.~~

~~My name is Peter Halstad. I have lived in Baltimore City for over 30 years – including on beautiful Mount Royal Terrace.~~

~~I'm looking at this proposal, and at this process, and at the smattering of media coverage and what I see is terrifying. This is insane! Speeding double-stacked freight trains with no limitations on their cargo save for some little signs, do NOT belong racing under residential areas in the center of a city! Do YOU want Monstrous Industrial vent shafts exhausting diesel fumes do NOT belong smack in the middle of housing and next to an elementary school. Normal zoning would never allow this.~~

~~I've seen enough proposals for so-called progress, and enough community hearings to have a bad feeling about how this will go. I call it experience, you may call it cynicism.~~

~~What I see are the citizens who live here and are building this neighborhood - many pouring blood, sweat, tears and every cent they have into these homes, many who spend hours doing good for the community, who pay taxes, who have made sacrifices to live in the city and supposedly make this city work, literally being railroaded by the big-moneyed corporate interests of the Port, CSX, Norfolk Freight and the Governor – all of them piggy backing on federal & state money being spent for the NEC passenger service. The parameters of this project are designed for double-stack FREIGHT trains which expand the demands and therefore shrink the options. I would really like for our government to prove they represent the citizens in this, but I fear it's not the case.~~

~~As to the Environmental impact study: I can accept that the engineers sincerely believe their calculations and their assurances when they say there will be minimal vibration, no damage to the stacked stone foundations, the soft brick walls and the brittle ornate plaster of our homes. However, their sincere belief doesn't do us a squat load of good when the foundation shifts, the bricks crack and the plaster falls. And it all will. Their own study even says there will be damage. But are those engineers going to come fix my foundation when it shifts? Are the study funders going to pay for the plaster repairs – a very specialized, expensive and hard to find skill, that some of us have spent thousands of dollars and hours on.~~

~~There has been talk of mitigation, of reparation for damages. But what does that mean? – I see a nightmare. I see the burden of proof being dumped on the owners of the damaged homes. "Prove that the damage to your house was caused by our process, not its age" regardless of the fact that it was standing just fine for 120 years – until someone drilled a 30' hole under it and shook the heck out of it. I see our homes and investments literally crumbling, while we try to decide whether to go broke trying to fix them, go broke trying to sue for damages against million dollar lawyers who all point at each other and claim no-fault, or go broke taking the loss on the tremendously reduced asset and moving out.~~

RESPONSES

Please reference **DEIS Comment #46.**

COMMENTS

RESPONSES

~~One alternative has huge tracks and entry tunnels right outside this very school.~~

~~Don't railroad right over us – or under us, I should say. And don't shaft us.~~

~~I understand the problem of the existing tunnel and the future of Amtrak's North East Corridor.~~

~~On the one hand, Morrell Park's victory in keeping the freight trains~~

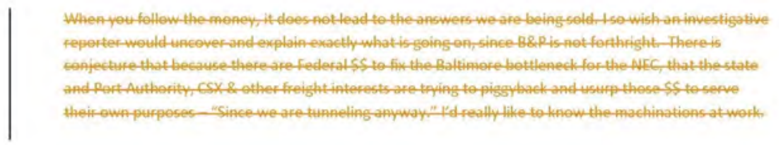
~~Something doesn't add up, and there is an effort to hide it.~~

~~I attended a B&P tunnel information meeting in December. At the time, I specifically asked about the use of the tunnels for freight trains. The host, Odessa Phillips, avoided answering and charged the Amtrak representative present to answer. His response: "These tunnels are under the auspices of Amtrak. Amtrak is dedicated to passenger service." THAT is NOT an answer to the question. It is an intentional evasion seemingly crafted to lead the questioner to make the logic leap of "therefore these tunnels are not for freight." So while the actual words may be true, the evasive 'answer' is dishonest. It indicates a purposeful intent to mislead. It is also projects an insultingly patronizing 'don't you worry about it' attitude, while waving a flag of transparency. Therefore these meetings have lost credibility, and made us even more suspicious of the project's true backers and nature. There seems to be a decision that Passenger Service is sellable, while freight lines under housing is not – so do your best to deny it without actually lying.~~

~~Some supporters of the tunnel project cite it as 'necessary for the competitive edge of Baltimore's Port.' That is clearly not about passengers, but about freight. At the B&P public meetings, elaborate charts are presented showing time savings for passengers of a maximum of 3 minutes, with a silly "total value of time for passengers" of about $40 million/year. It is ridiculous to expect us to believe that it is in Amtrak's, the public's or anyone's interest to spend $4billion to save passengers mere seconds of time, and that the 1% annual return of $40 million – which cannot be captured, and would take 100 years to realize – is a compelling reason for this action.~~

COMMENTS

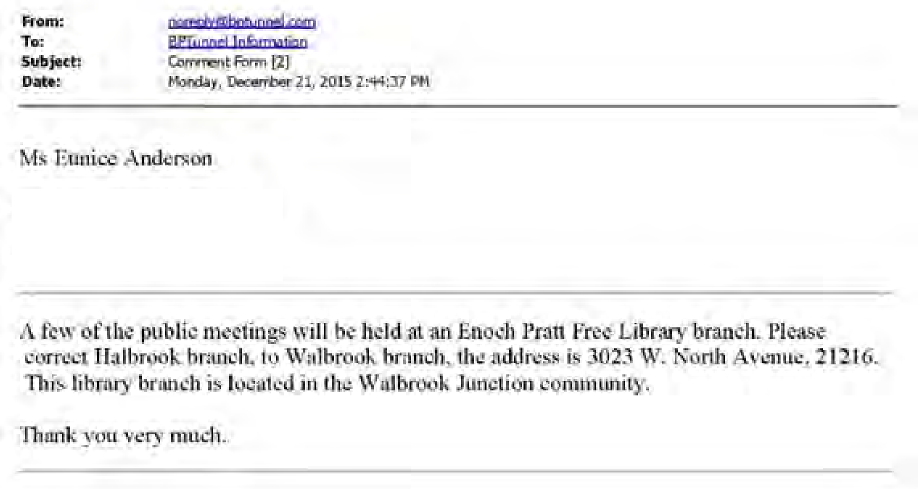
RESPONSES



~~When you follow the money, it does not lead to the answers we are being sold. I so wish an investigative reporter would uncover and explain exactly what is going on, since B&P is not forthright. There is conjecture that because there are Federal $$ to fix the Baltimore bottleneck for the NEC, that the state and Port Authority, CSX & other freight interests are trying to piggyback and usurp those $$ to serve their own purposes – "Since we are tunneling anyway." I'd really like to know the machinations at work.~~

COMMENTS

DEIS Comment 4:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form [2]
Date: Monday, December 21, 2015 2:44:37 PM

Ms Eunice Anderson

A few of the public meetings will be held at an Enoch Pratt Free Library branch. Please correct Halbrook branch, to Walbrook branch, the address is 3023 W. North Avenue, 21216. This library branch is located in the Walbrook Junction community.

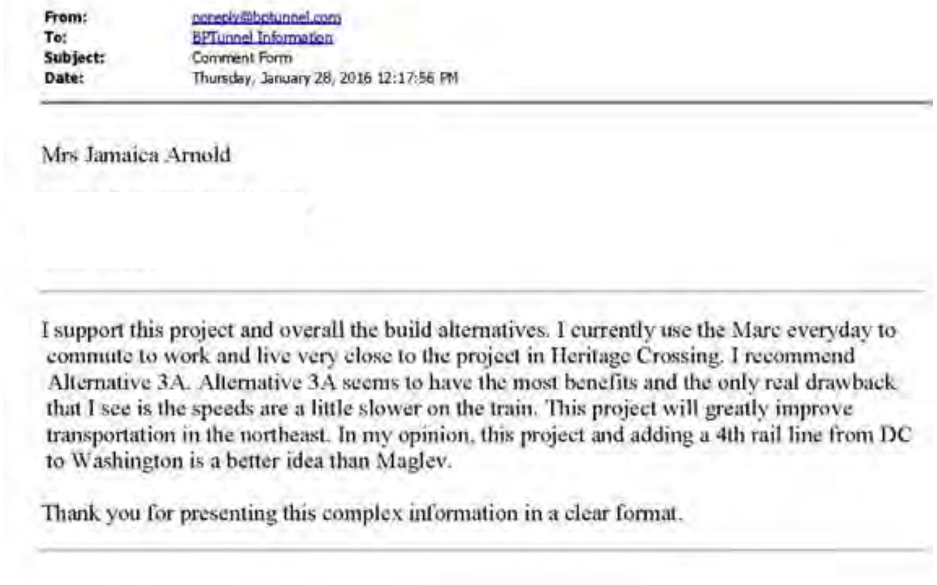
Thank you very much.

RESPONSES

Thank you for your comment.

COMMENTS

DEIS Comment 5:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Thursday, January 28, 2016 12:17:56 PM

Mrs Jamaica Arnold

1 I support this project and overall the build alternatives. I currently use the Marc everyday to commute to work and live very close to the project in Heritage Crossing. I recommend Alternative 3A. Alternative 3A seems to have the most benefits and the only real drawback that I see is the speeds are a little slower on the train. This project will greatly improve transportation in the northeast. In my opinion, this project and adding a 4th rail line from DC to Washington is a better idea than Maglev.

Thank you for presenting this complex information in a clear format.

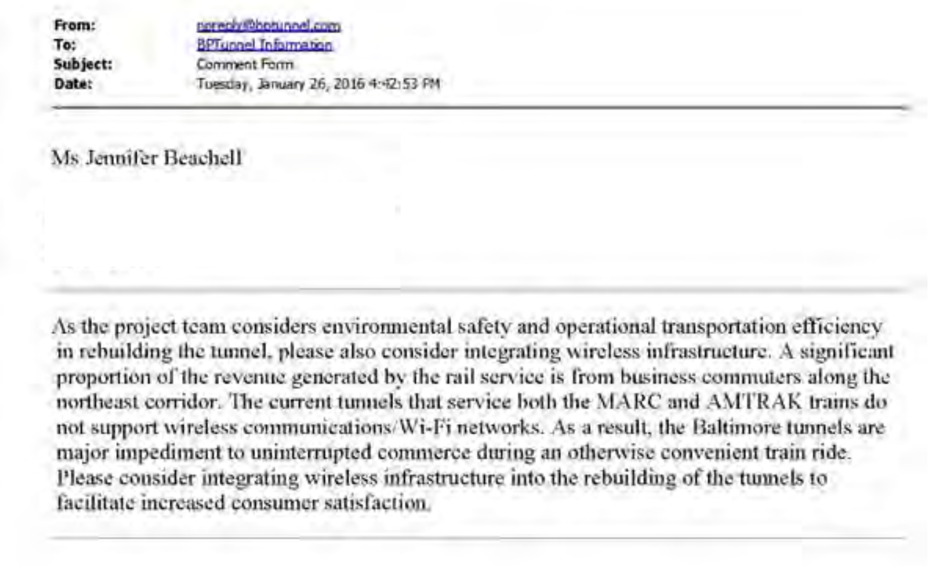
RESPONSES

Response to Comment 1:
Thank you for your comment. The FEIS identifies Alternative 3B as the Preferred Alternative.

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 6:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Tuesday, January 26, 2016 4:42:53 PM

Ms Jennifer Beachell

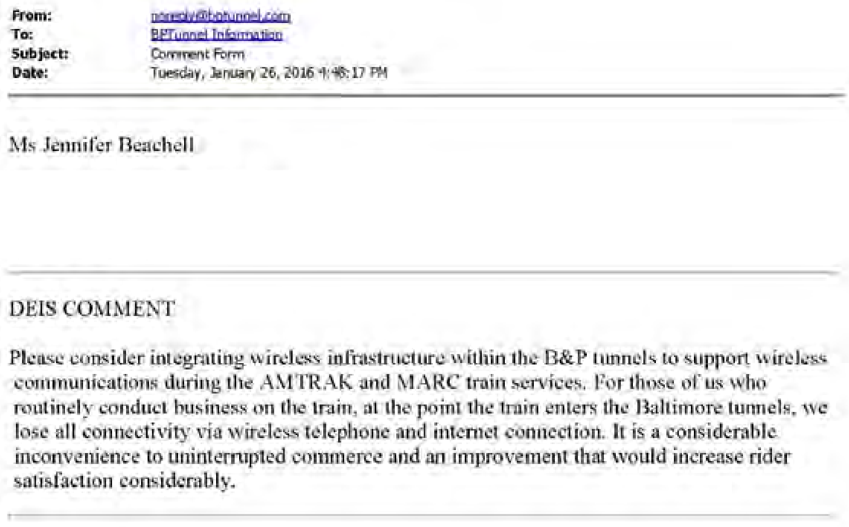
1 As the project team considers environmental safety and operational transportation efficiency in rebuilding the tunnel, please also consider integrating wireless infrastructure. A significant proportion of the revenue generated by the rail service is from business commuters along the northeast corridor. The current tunnels that service both the MARC and AMTRAK trains do not support wireless communications/Wi-Fi networks. As a result, the Baltimore tunnels are major impediment to uninterrupted commerce during an otherwise convenient train ride. Please consider integrating wireless infrastructure into the rebuilding of the tunnels to facilitate increased consumer satisfaction.

RESPONSES

Response to Comment 1:
We appreciate your concern. However, wireless services on trains are features offered by the train operators and are not considered in this Project.

COMMENTS

DEIS Comment 7:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Tuesday, January 26, 2016 4:48:17 PM

Ms Jennifer Beachell

DEIS COMMENT

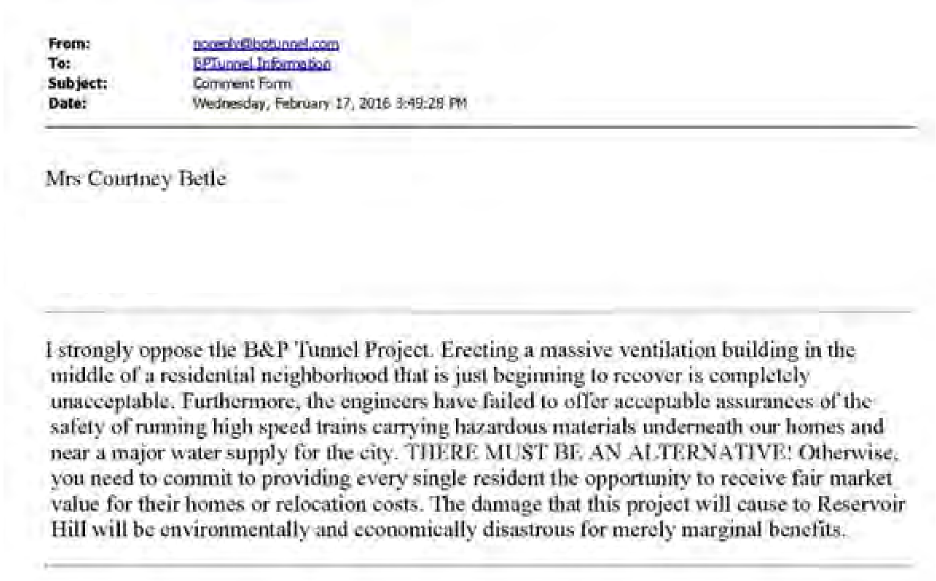
1 Please consider integrating wireless infrastructure within the B&P tunnels to support wireless communications during the AMTRAK and MARC train services. For those of us who routinely conduct business on the train, at the point the train enters the Baltimore tunnels, we lose all connectivity via wireless telephone and internet connection. It is a considerable inconvenience to uninterrupted commerce and an improvement that would increase rider satisfaction considerably.

RESPONSES

Response to Comment 1:
We appreciate your concern. However, wireless services on trains are features offered by the train operators and are not considered in this Project.

COMMENTS

DEIS Comment 8:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Wednesday, February 17, 2016 3:49:28 PM

Mrs Courtney Betle

1 I strongly oppose the B&P Tunnel Project. Erecting a massive ventilation building in the
middle of a residential neighborhood that is just beginning to recover is completely
unacceptable. Furthermore, the engineers have failed to offer acceptable assurances of the
2 safety of running high speed trains carrying hazardous materials underneath our homes and
3 near a major water supply for the city. THERE MUST BE AN ALTERNATIVE! Otherwise,
you need to commit to providing every single resident the opportunity to receive fair market
4 value for their homes or relocation costs. The damage that this project will cause to Reservoir
Hill will be environmentally and economically disastrous for merely marginal benefits.

RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 2:
Amtrak and Norfolk Southern (NS) are anticipated to use existing fleets and newly acquired equipment in the tunnel. This equipment must meet federal standards for safe operations. In addition, the tunnel will be equipped with Automatic Train Control (ATC) and Positive Train Control (PTC) systems, which use computer systems to control the speed of both passenger and freight trains within the tunnel.

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

COMMENTS

RESPONSES

No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water.

Response to Comment 3:
A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project’s Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

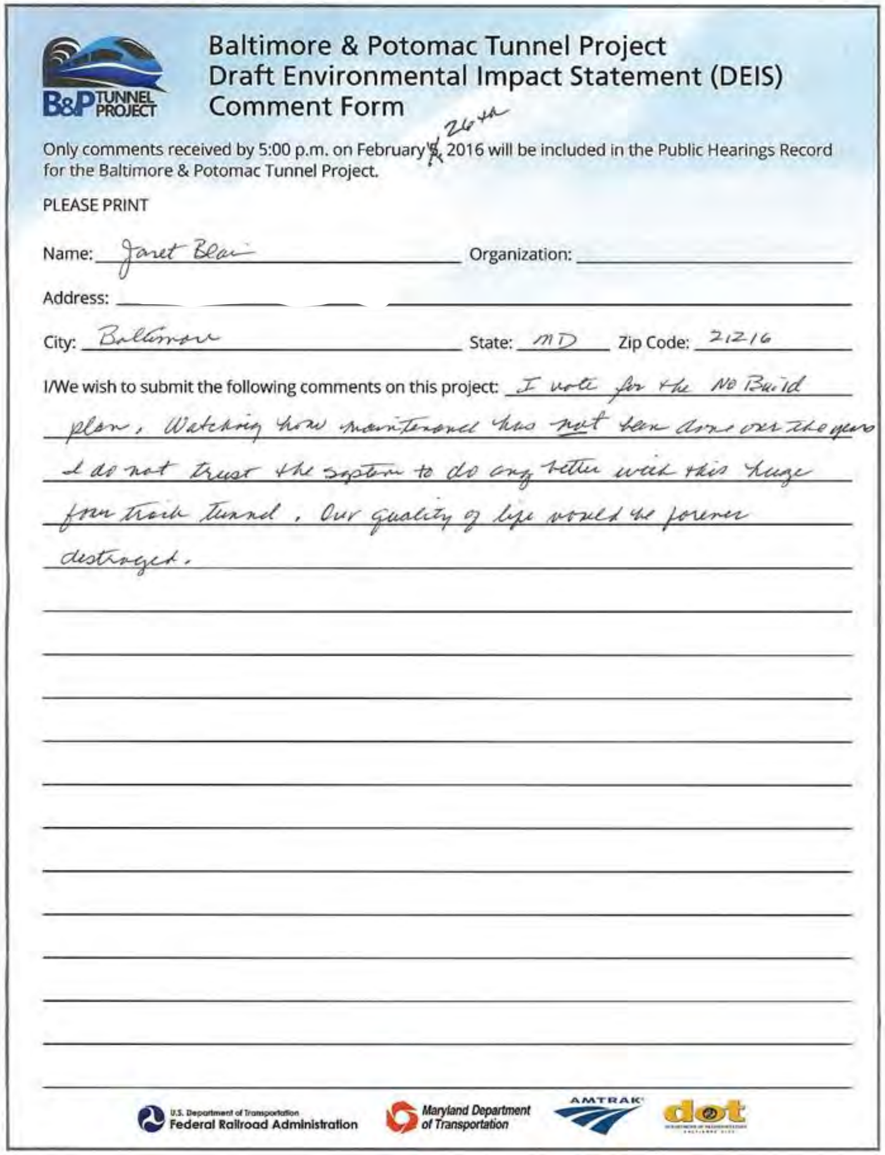
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

Response to Comment 4:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

COMMENTS	RESPONSES
	For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**. The economic market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS

DEIS Comment 9:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February ~~5~~ 26th, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Janet Blair
Organization:
Address: [redacted]
City: Baltimore
State: MD
Zip Code: 21216

1 I/We wish to submit the following comments on this project: I vote for the No Build plan. Watching how maintenance has not been done over the years I do not trust the system to do any better with this huge four track Tunnel. Our quality of life would be forever destroyed.

U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK
dot

RESPONSES

Response to Comment 1:
The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

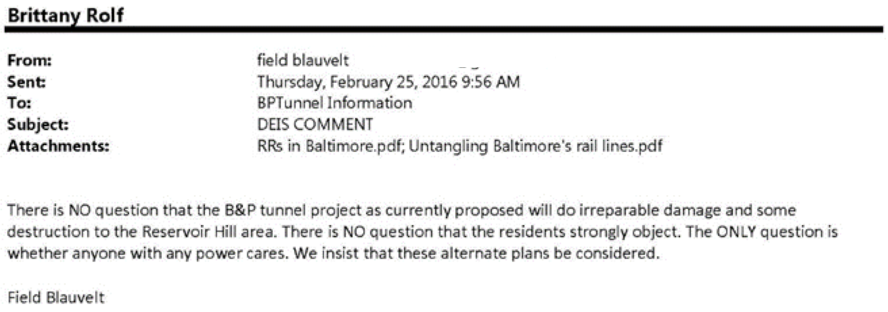
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

COMMENTS

DEIS Comment 10:



Brittany Rolf

From:	field blauvelt
Sent:	Thursday, February 25, 2016 9:56 AM
To:	BPTunnel Information
Subject:	DEIS COMMENT
Attachments:	RRs in Baltimore.pdf; Untangling Baltimore's rail lines.pdf

1 There is NO question that the B&P tunnel project as currently proposed will do irreparable damage and some destruction to the Reservoir Hill area. There is NO question that the residents strongly object. The ONLY question is whether anyone with any power cares. We insist that these alternate plans be considered.

Field Blauvelt

RESPONSES

Response to Comment 1:
For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.More information about potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI, Section A** of the FEIS.

The Project Team has engaged in extensive public outreach throughout the development of the Project including three Public Open Houses, as well as ten community meetings where the public was given the opportunity to learn about project development and engage in discussion with the Project Team. In addition to these meetings, Mitigation Working Groups comprised of community organization representatives and members of the Project Team were established to determine the most effective mitigation for the Project. Details of this outreach are described in **Chapter VI**, as well as **Chapter VIII.**

A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

COMMENTS

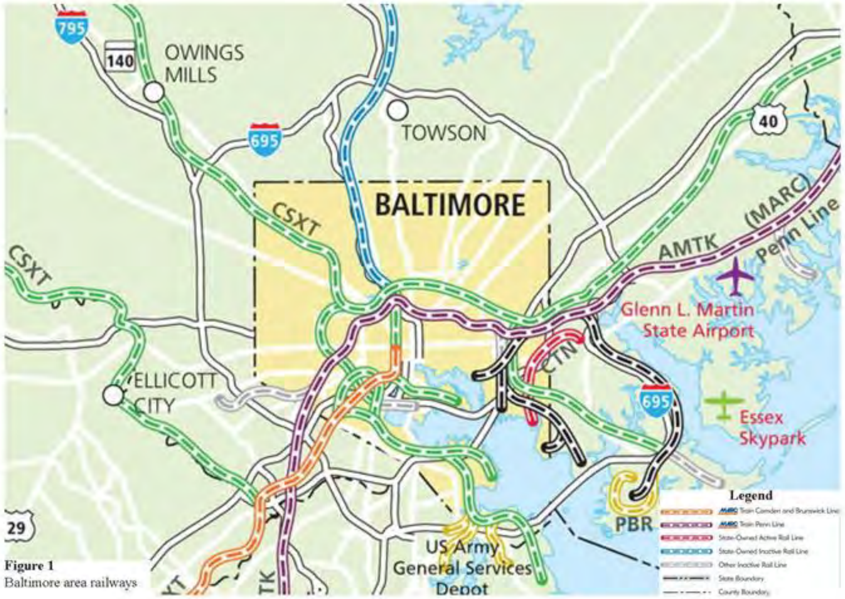


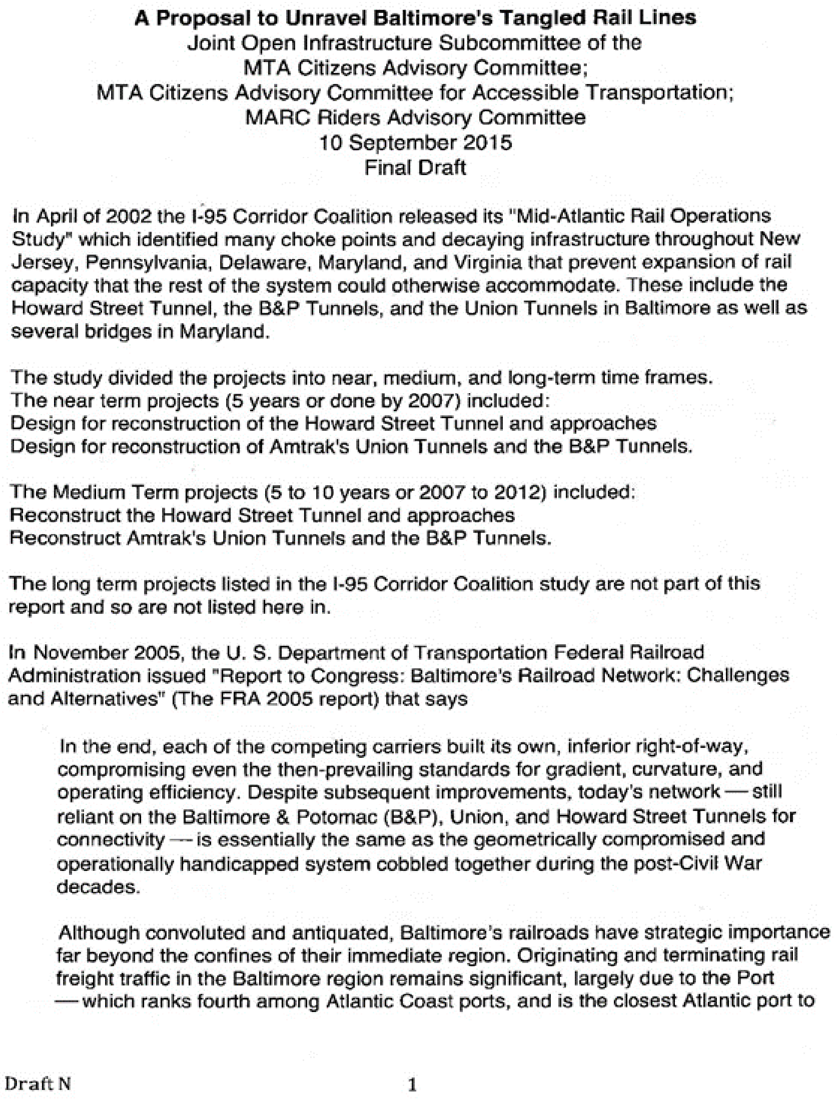
Figure 1
Baltimore area railways

RESPONSES

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 11:



1 **A Proposal to Unravel Baltimore's Tangled Rail Lines**
Joint Open Infrastructure Subcommittee of the
MTA Citizens Advisory Committee;
MTA Citizens Advisory Committee for Accessible Transportation;
MARC Riders Advisory Committee
10 September 2015
Final Draft

In April of 2002 the I-95 Corridor Coalition released its "Mid-Atlantic Rail Operations Study" which identified many choke points and decaying infrastructure throughout New Jersey, Pennsylvania, Delaware, Maryland, and Virginia that prevent expansion of rail capacity that the rest of the system could otherwise accommodate. These include the Howard Street Tunnel, the B&P Tunnels, and the Union Tunnels in Baltimore as well as several bridges in Maryland.

The study divided the projects into near, medium, and long-term time frames.
The near term projects (5 years or done by 2007) included:
Design for reconstruction of the Howard Street Tunnel and approaches
Design for reconstruction of Amtrak's Union Tunnels and the B&P Tunnels.

The Medium Term projects (5 to 10 years or 2007 to 2012) included:
Reconstruct the Howard Street Tunnel and approaches
Reconstruct Amtrak's Union Tunnels and the B&P Tunnels.

The long term projects listed in the I-95 Corridor Coalition study are not part of this report and so are not listed here in.

In November 2005, the U. S. Department of Transportation Federal Railroad Administration issued "Report to Congress: Baltimore's Railroad Network: Challenges and Alternatives" (The FRA 2005 report) that says

> In the end, each of the competing carriers built its own, inferior right-of-way, compromising even the then-prevailing standards for gradient, curvature, and operating efficiency. Despite subsequent improvements, today's network — still reliant on the Baltimore & Potomac (B&P), Union, and Howard Street Tunnels for connectivity — is essentially the same as the geometrically compromised and operationally handicapped system cobbled together during the post-Civil War decades.
>
> Although convoluted and antiquated, Baltimore's railroads have strategic importance far beyond the confines of their immediate region. Originating and terminating rail freight traffic in the Baltimore region remains significant, largely due to the Port — which ranks fourth among Atlantic Coast ports, and is the closest Atlantic port to

RESPONSES

Response to Comment 1:
The report provided, *A Proposal to Unravel Baltimore's Tangled Rail Lines*, argues for a comprehensive system approach to rail planning in Baltimore and the mid-Atlantic region. It describes a list of projects and the order in which they should be completed. The report takes into consideration local, state, and regional transportation routes, and recommends new construction at a number of locations in order to relieve congestion and create opportunities for expanding rail service in the future.

While recommendations in the report focus on resolving issues at a regional level, they would not address or resolve the specific needs of the Project. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life. It is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. For additional information regarding the purpose and need of the Project, please see **Chapter II** of this FEIS.

COMMENTS

RESPONSES

> major Midwestern markets — and the region's remaining industrial base. Through freight traffic is important on the CSXT's traffic lanes traversing Baltimore between the Northeast on the one hand, and the Midwest and South on the other, despite restrictions due to clearance limitations. Indeed, CSXT owns no alternate north-south route east of the Appalachian Mountains. With respect to intercity passenger service, one-fifth of Amtrak's passenger-trips, one-quarter of its passenger-miles, and one-third of its ticket revenues depend on travel over Baltimore's railways. For all these reasons, the condition, capacity, efficiency, and effectiveness of the Baltimore region's rail network affect the performance of the national transportation grid — as became graphically evident in the massive traffic dislocations caused by the 2001 fire in the Howard Street Tunnel. (Page ES-2)

Both of these reports state that congestion of Baltimore's Rail infrastructure has national significance; therefore, it would seem reasonable that significant Federal assistance should be available for these projects.

A problem with past and current transportation planning methods is that they are project focused. The projects that get done first are the ones with the greatest political muscle, and not necessary the projects that make the most engineering, operational, fiscal, or financial sense. Generally, construction of new service receives the political support while maintenance is underfunded and the existing systems slowly decay.

As indicated by the FRA report, Baltimore's rail problems are a tangled mess built project by project, each compromising performance to fit the then achievable project constraints. Perhaps the tangle is best demonstrated by the east end of the B&P Tunnels, which has been described as one of the densest transportation points in the region with the CSX tracks passing right above the B&P tunnels, and the Central Light Rail squeezed between the CSX tracks, Howard Street, North Ave, and I-83. Both the freight and Central Light Rail were built with grades that exceeded the recommended maximum. It is necessary to take a full system approach to this problem and "unpack" the conflicts. By doing things in the correct order, the total construction costs will be reduced by several billion dollars and the final system performance significantly enhanced, with reduced operating costs, over what can be achieved using a project by project approach.

The most important projects (the tunnels) have been too large to attempt within a reasonable "project" budget. Therefore, there have been minor efforts to "modernize" the system, such as single tracking the CSX line to accommodate taller trains, which actually reduced capacity, while not addressing the fundamental problems. There have also been minor repairs and maintenance such as to the B&P Tunnels, which prevent them from falling down but don't solve the underlying problems. Meanwhile, the years go by and the structures deteriorate. When they become unusable, there will not be sufficient time to replace them and the service will be disrupted for an extended time. However, a comprehensive examination of the infrastructure needs, with a commitment

COMMENTS **RESPONSES**

to implementing it, is three quarters of a century overdue.

The proposal here is primarily one for preservation of current rail capacity (intercity passenger and freight service through Baltimore) designed and phased in such a way as to set the stage for future expansion. It is our view that the shape of the intercity rail system (track, tunnel, and station locations) should be established before significant investment is made in local service because the available and appropriate local routes and destinations may change depending on major rail system structure. In many cases, work on intercity lines will disrupt existing local service. Therefore, some local projects are phased ahead of the intercity projects either to clear space for future construction or to provide alternate travel options during disruptions so as to avoid any Title 6 issues.

While we are only recommending an order of construction, and not a construction schedule, the condition of the existing rail tunnels and their critical importance to the local and national economies should impel us to build these as soon as we can finance them.

This report focuses only on heavier radial systems (mainline freight, Maglev, high-speed rail, Amtrak international service, and automated heavy metro.) No lighter system (light metro, aerial tramway, people mover, light rail, street car, trackless trolley or exclusive busway) should be planned or funded until all heavier system are completed first. This means that all crosstown, cross-county, feeder, supplemental, short lines, and local service lines involving fixed guideway infrastructure should be delayed indefinitely. All lighter systems require space and funds. Implantation of these types of lines will certainly delay and may prevent construction of heaver systems. The serious accidents, congestion and delay during the testing of the H Street street car in Washington DC illustrates the danger of trying to do the job of heavier systems with lighter infrastructure in highly congested areas.

In the 21st century, there will be a renewed interest in rail travel. The proposal described here sets the stage for the eventual reestablishment of rail service from Baltimore west through Westminster to western Maryland and the Midwest, north to York and central Pennsylvania, New York, and Ontario, and southeast to Annapolis and the Eastern Shore. (These routes are described in more detail at the end of this proposal.)

To untangle the rail transportation mess and set the stage for the intercity lines described above, the following projects should be done in this precise order:

0) Extending MARC service to Wilmington.

1) Automation and extension of the existing Baltimore Metro Subway from Johns Hopkins Hospital (JHH) along the south side of the Amtrak right-of-way (North East Corridor or NEC) to Orangeville, and on to the Travel Plaza with a yard, bus depot, and MARC connection at Orangeville. A junction at I-895, near Bayview yard, will permit a

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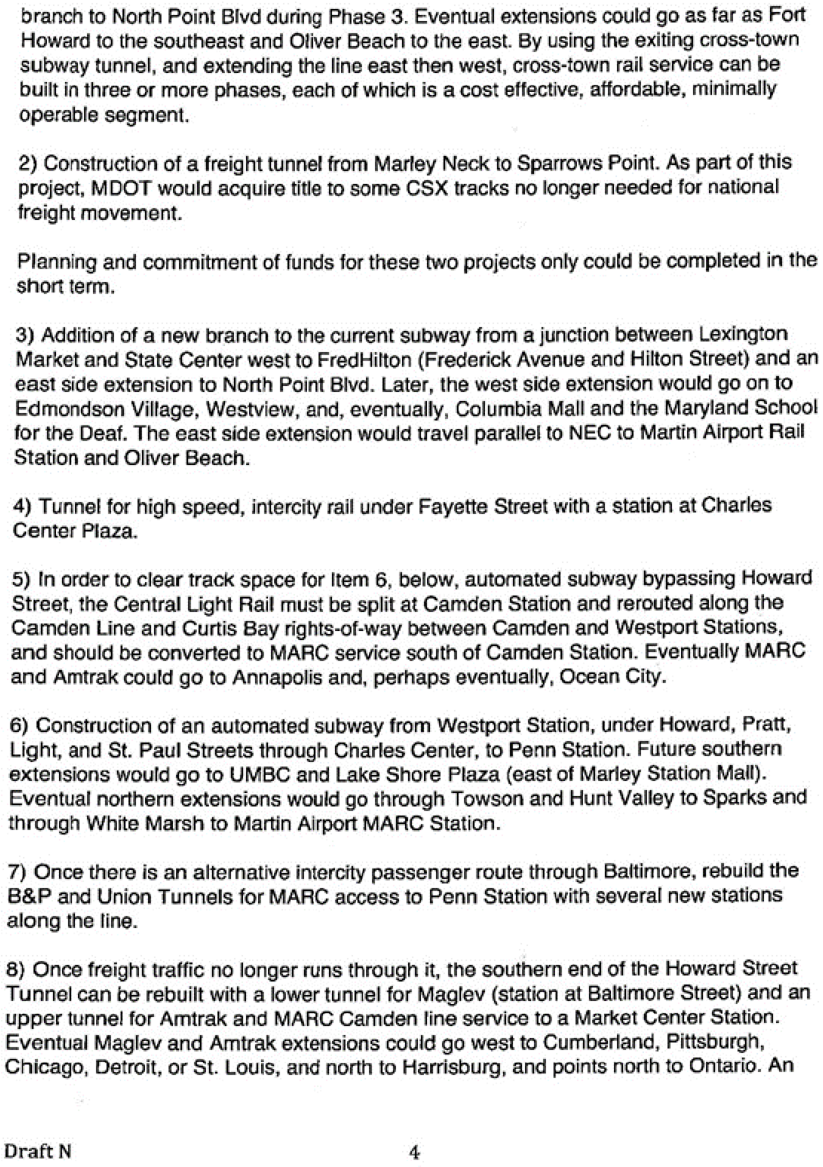

branch to North Point Blvd during Phase 3. Eventual extensions could go as far as Fort Howard to the southeast and Oliver Beach to the east. By using the exiting cross-town subway tunnel, and extending the line east then west, cross-town rail service can be built in three or more phases, each of which is a cost effective, affordable, minimally operable segment.

2) Construction of a freight tunnel from Marley Neck to Sparrows Point. As part of this project, MDOT would acquire title to some CSX tracks no longer needed for national freight movement.

Planning and commitment of funds for these two projects only could be completed in the short term.

3) Addition of a new branch to the current subway from a junction between Lexington Market and State Center west to FredHilton (Frederick Avenue and Hilton Street) and an east side extension to North Point Blvd. Later, the west side extension would go on to Edmondson Village, Westview, and, eventually, Columbia Mall and the Maryland School for the Deaf. The east side extension would travel parallel to NEC to Martin Airport Rail Station and Oliver Beach.

4) Tunnel for high speed, intercity rail under Fayette Street with a station at Charles Center Plaza.

5) In order to clear track space for Item 6, below, automated subway bypassing Howard Street, the Central Light Rail must be split at Camden Station and rerouted along the Camden Line and Curtis Bay rights-of-way between Camden and Westport Stations, and should be converted to MARC service south of Camden Station. Eventually MARC and Amtrak could go to Annapolis and, perhaps eventually, Ocean City.

6) Construction of an automated subway from Westport Station, under Howard, Pratt, Light, and St. Paul Streets through Charles Center, to Penn Station. Future southern extensions would go to UMBC and Lake Shore Plaza (east of Marley Station Mall). Eventual northern extensions would go through Towson and Hunt Valley to Sparks and through White Marsh to Martin Airport MARC Station.

7) Once there is an alternative intercity passenger route through Baltimore, rebuild the B&P and Union Tunnels for MARC access to Penn Station with several new stations along the line.

8) Once freight traffic no longer runs through it, the southern end of the Howard Street Tunnel can be rebuilt with a lower tunnel for Maglev (station at Baltimore Street) and an upper tunnel for Amtrak and MARC Camden line service to a Market Center Station. Eventual Maglev and Amtrak extensions could go west to Cumberland, Pittsburgh, Chicago, Detroit, or St. Louis, and north to Harrisburg, and points north to Ontario. An

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eventual MARC extension would branch to go to Penn Station or north to York or Hanover and Gettysburg, or west to Westminster, Hagerstown, and Cumberland. MARC and Amtrak train sections from the west would use the Western Maryland, Greenspring Valley branch right of way with MARC stations serving Stevenson University and Greenspring Station.

Note: it is necessary to increase the Howard Street east side setback for the new "super block" to 25 plus feet from the tunnel to permit expansion and reconstruction of the tunnel. The foundations of the Read's Drug Store at Lexington and Howard would need to be stabilized as part of tunnel construction.

Items 3 through 8 should be added to the Consolidated Transportation Plan (CTP) during Governor Hogan's term in office.

Explanation of construction order:
Item 1, conversion of the existing subway to an automated line with an east side extension of the Metro from JHH to the Travel Plaza with a proposed Metro rail yard on the Armco Specialty Steel brownfield site at Orangeville must be done in phase 1 as later work will cut the Subway line (between Lexington and State Center stations) for a west side branch. The Orangeville yard will permit service east from Lexington Market during the later west side branch construction, and the length of the line will justify continued eastside operation. This line, with the west side extension, will provide a rail bridge around Penn Station for MARC passengers to/from Harford and Cecil Counties while the B&P and Union Tunnels are rebuilt during phase 7.

This alignment would be far less costly and provide much better service than the proposed Red Line east side. The direct connection from I-95 and I-895 to the Travel Plaza with its ample free parking and short rail travel time (about 10 to 12 minutes) to downtown will attract a significant amount of traffic from I-95 and I-895. Unlike the Red Line, there will be no temptation for commuters to park on the streets of Canton to avoid downtown parking fees. This subway extension will reduce congestion in the Fort McHenry Tunnel because some fraction of the cars from the north that use the tunnel to access downtown by way of I-395 will switch to the automated metro. Eastside subway service will permit restructuring of the east side bus lines. This will increase bus reliability, reduce bus operating costs, increase the number of buses available for use on over crowded bus lines, and reduce rider travel times. By being farther from the harbor, and higher than Boston Street, this alignment will be immune to the coastal surge flooding that makes a Red Line Boston Street portal risky with sea levels rising. This line would likely increase MARC ridership from northeast of Baltimore by providing a quick connection at Orangeville to JHH and the development around it, downtown, and University Center (from Lexington Market Station).

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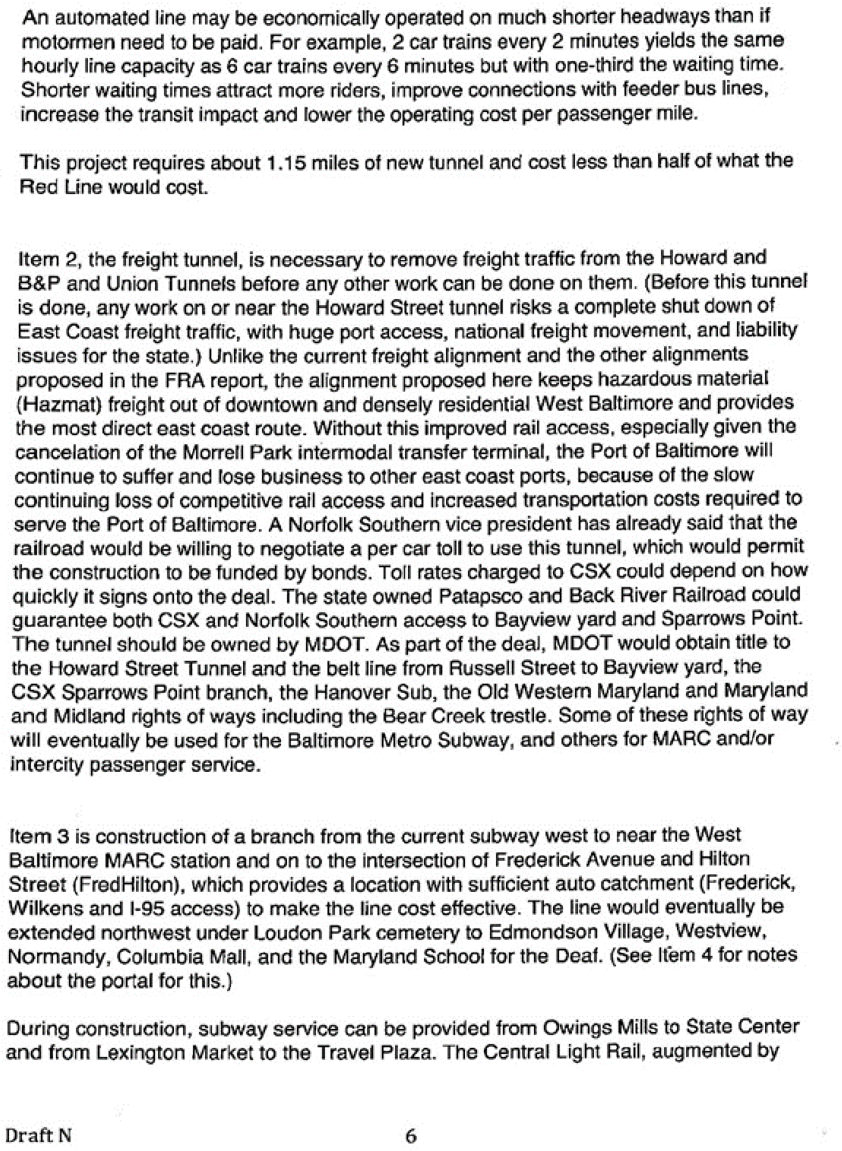

An automated line may be economically operated on much shorter headways than if motormen need to be paid. For example, 2 car trains every 2 minutes yields the same hourly line capacity as 6 car trains every 6 minutes but with one-third the waiting time. Shorter waiting times attract more riders, improve connections with feeder bus lines, increase the transit impact and lower the operating cost per passenger mile.

This project requires about 1.15 miles of new tunnel and cost less than half of what the Red Line would cost.

Item 2, the freight tunnel, is necessary to remove freight traffic from the Howard and B&P and Union Tunnels before any other work can be done on them. (Before this tunnel is done, any work on or near the Howard Street tunnel risks a complete shut down of East Coast freight traffic, with huge port access, national freight movement, and liability issues for the state.) Unlike the current freight alignment and the other alignments proposed in the FRA report, the alignment proposed here keeps hazardous material (Hazmat) freight out of downtown and densely residential West Baltimore and provides the most direct east coast route. Without this improved rail access, especially given the cancelation of the Morrell Park intermodal transfer terminal, the Port of Baltimore will continue to suffer and lose business to other east coast ports, because of the slow continuing loss of competitive rail access and increased transportation costs required to serve the Port of Baltimore. A Norfolk Southern vice president has already said that the railroad would be willing to negotiate a per car toll to use this tunnel, which would permit the construction to be funded by bonds. Toll rates charged to CSX could depend on how quickly it signs onto the deal. The state owned Patapsco and Back River Railroad could guarantee both CSX and Norfolk Southern access to Bayview yard and Sparrows Point. The tunnel should be owned by MDOT. As part of the deal, MDOT would obtain title to the Howard Street Tunnel and the belt line from Russell Street to Bayview yard, the CSX Sparrows Point branch, the Hanover Sub, the Old Western Maryland and Maryland and Midland rights of ways including the Bear Creek trestle. Some of these rights of way will eventually be used for the Baltimore Metro Subway, and others for MARC and/or intercity passenger service.

Item 3 is construction of a branch from the current subway west to near the West Baltimore MARC station and on to the intersection of Frederick Avenue and Hilton Street (FredHilton), which provides a location with sufficient auto catchment (Frederick, Wilkens and I-95 access) to make the line cost effective. The line would eventually be extended northwest under Loudon Park cemetery to Edmondson Village, Westview, Normandy, Columbia Mall, and the Maryland School for the Deaf. (See Item 4 for notes about the portal for this.)

During construction, subway service can be provided from Owings Mills to State Center and from Lexington Market to the Travel Plaza. The Central Light Rail, augmented by

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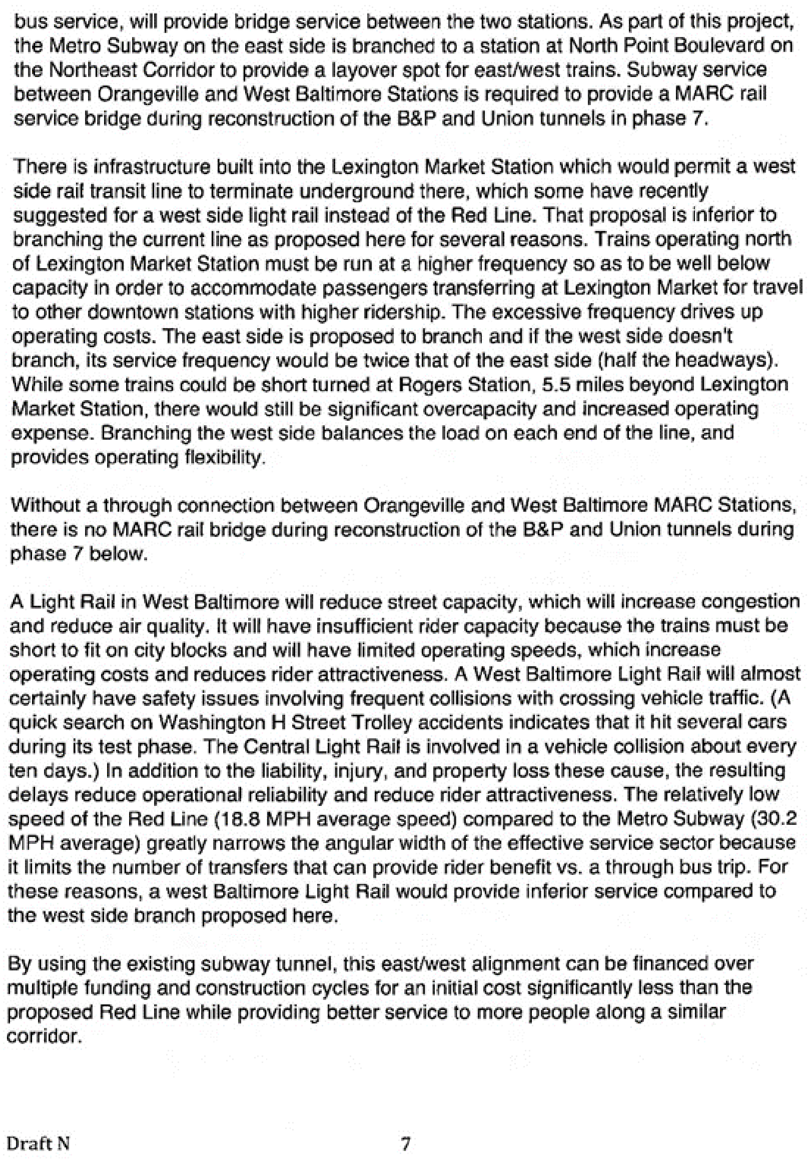

bus service, will provide bridge service between the two stations. As part of this project, the Metro Subway on the east side is branched to a station at North Point Boulevard on the Northeast Corridor to provide a layover spot for east/west trains. Subway service between Orangeville and West Baltimore Stations is required to provide a MARC rail service bridge during reconstruction of the B&P and Union tunnels in phase 7.

There is infrastructure built into the Lexington Market Station which would permit a west side rail transit line to terminate underground there, which some have recently suggested for a west side light rail instead of the Red Line. That proposal is inferior to branching the current line as proposed here for several reasons. Trains operating north of Lexington Market Station must be run at a higher frequency so as to be well below capacity in order to accommodate passengers transferring at Lexington Market for travel to other downtown stations with higher ridership. The excessive frequency drives up operating costs. The east side is proposed to branch and if the west side doesn't branch, its service frequency would be twice that of the east side (half the headways). While some trains could be short turned at Rogers Station, 5.5 miles beyond Lexington Market Station, there would still be significant overcapacity and increased operating expense. Branching the west side balances the load on each end of the line, and provides operating flexibility.

Without a through connection between Orangeville and West Baltimore MARC Stations, there is no MARC rail bridge during reconstruction of the B&P and Union tunnels during phase 7 below.

A Light Rail in West Baltimore will reduce street capacity, which will increase congestion and reduce air quality. It will have insufficient rider capacity because the trains must be short to fit on city blocks and will have limited operating speeds, which increase operating costs and reduces rider attractiveness. A West Baltimore Light Rail will almost certainly have safety issues involving frequent collisions with crossing vehicle traffic. (A quick search on Washington H Street Trolley accidents indicates that it hit several cars during its test phase. The Central Light Rail is involved in a vehicle collision about every ten days.) In addition to the liability, injury, and property loss these cause, the resulting delays reduce operational reliability and reduce rider attractiveness. The relatively low speed of the Red Line (18.8 MPH average speed) compared to the Metro Subway (30.2 MPH average) greatly narrows the angular width of the effective service sector because it limits the number of transfers that can provide rider benefit vs. a through bus trip. For these reasons, a west Baltimore Light Rail would provide inferior service compared to the west side branch proposed here.

By using the existing subway tunnel, this east/west alignment can be financed over multiple funding and construction cycles for an initial cost significantly less than the proposed Red Line while providing better service to more people along a similar corridor.

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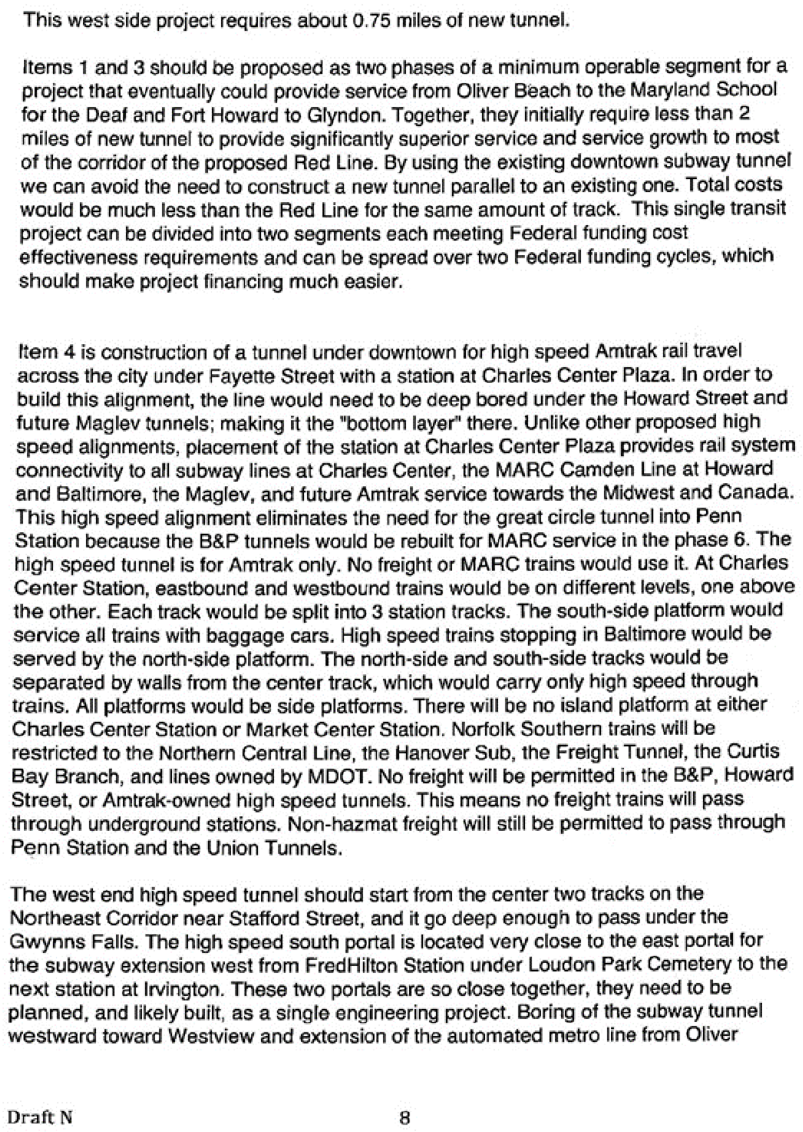

This west side project requires about 0.75 miles of new tunnel.

Items 1 and 3 should be proposed as two phases of a minimum operable segment for a project that eventually could provide service from Oliver Beach to the Maryland School for the Deaf and Fort Howard to Glyndon. Together, they initially require less than 2 miles of new tunnel to provide significantly superior service and service growth to most of the corridor of the proposed Red Line. By using the existing downtown subway tunnel we can avoid the need to construct a new tunnel parallel to an existing one. Total costs would be much less than the Red Line for the same amount of track. This single transit project can be divided into two segments each meeting Federal funding cost effectiveness requirements and can be spread over two Federal funding cycles, which should make project financing much easier.

Item 4 is construction of a tunnel under downtown for high speed Amtrak rail travel across the city under Fayette Street with a station at Charles Center Plaza. In order to build this alignment, the line would need to be deep bored under the Howard Street and future Maglev tunnels; making it the "bottom layer" there. Unlike other proposed high speed alignments, placement of the station at Charles Center Plaza provides rail system connectivity to all subway lines at Charles Center, the MARC Camden Line at Howard and Baltimore, the Maglev, and future Amtrak service towards the Midwest and Canada. This high speed alignment eliminates the need for the great circle tunnel into Penn Station because the B&P tunnels would be rebuilt for MARC service in the phase 6. The high speed tunnel is for Amtrak only. No freight or MARC trains would use it. At Charles Center Station, eastbound and westbound trains would be on different levels, one above the other. Each track would be split into 3 station tracks. The south-side platform would service all trains with baggage cars. High speed trains stopping in Baltimore would be served by the north-side platform. The north-side and south-side tracks would be separated by walls from the center track, which would carry only high speed through trains. All platforms would be side platforms. There will be no island platform at either Charles Center Station or Market Center Station. Norfolk Southern trains will be restricted to the Northern Central Line, the Hanover Sub, the Freight Tunnel, the Curtis Bay Branch, and lines owned by MDOT. No freight will be permitted in the B&P, Howard Street, or Amtrak-owned high speed tunnels. This means no freight trains will pass through underground stations. Non-hazmat freight will still be permitted to pass through Penn Station and the Union Tunnels.

The west end high speed tunnel should start from the center two tracks on the Northeast Corridor near Stafford Street, and it go deep enough to pass under the Gwynns Falls. The high speed south portal is located very close to the east portal for the subway extension west from FredHilton Station under Loudon Park Cemetery to the next station at Irvington. These two portals are so close together, they need to be planned, and likely built, as a single engineering project. Boring of the subway tunnel westward toward Westview and extension of the automated metro line from Oliver

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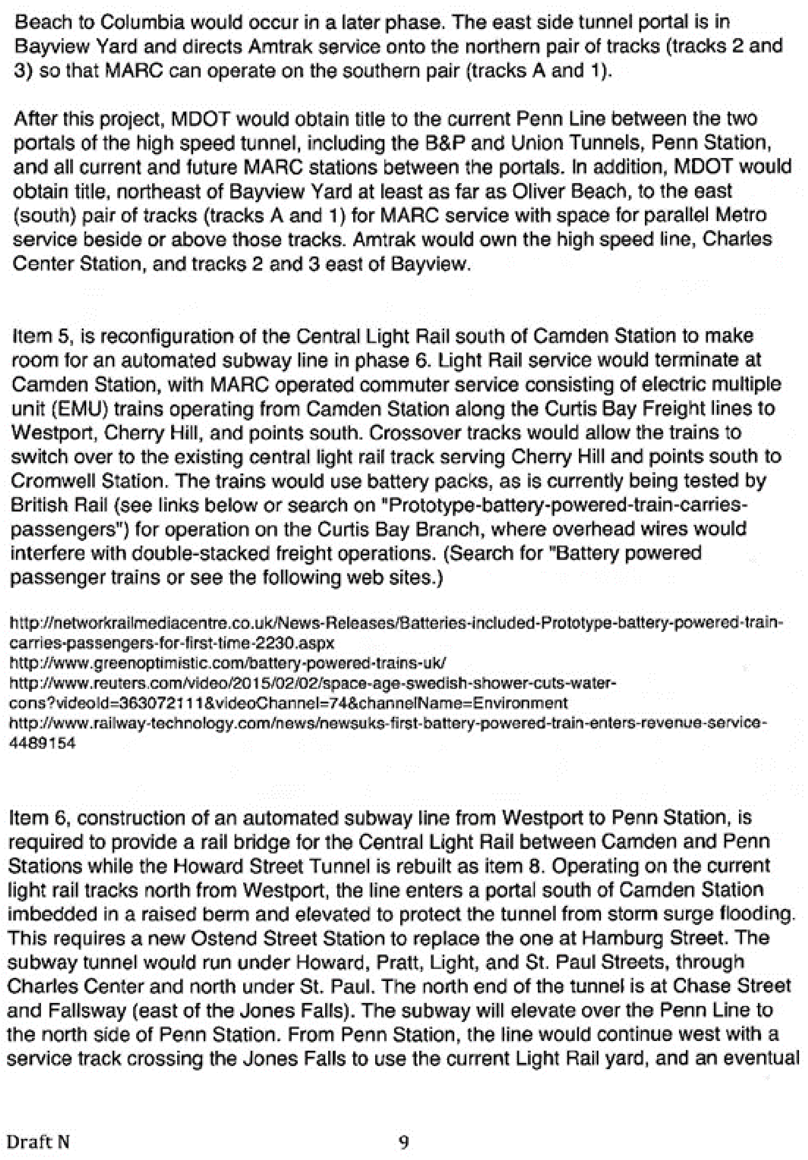

Beach to Columbia would occur in a later phase. The east side tunnel portal is in Bayview Yard and directs Amtrak service onto the northern pair of tracks (tracks 2 and 3) so that MARC can operate on the southern pair (tracks A and 1).

After this project, MDOT would obtain title to the current Penn Line between the two portals of the high speed tunnel, including the B&P and Union Tunnels, Penn Station, and all current and future MARC stations between the portals. In addition, MDOT would obtain title, northeast of Bayview Yard at least as far as Oliver Beach, to the east (south) pair of tracks (tracks A and 1) for MARC service with space for parallel Metro service beside or above those tracks. Amtrak would own the high speed line, Charles Center Station, and tracks 2 and 3 east of Bayview.

Item 5, is reconfiguration of the Central Light Rail south of Camden Station to make room for an automated subway line in phase 6. Light Rail service would terminate at Camden Station, with MARC operated commuter service consisting of electric multiple unit (EMU) trains operating from Camden Station along the Curtis Bay Freight lines to Westport, Cherry Hill, and points south. Crossover tracks would allow the trains to switch over to the existing central light rail track serving Cherry Hill and points south to Cromwell Station. The trains would use battery packs, as is currently being tested by British Rail (see links below or search on "Prototype-battery-powered-train-carries-passengers") for operation on the Curtis Bay Branch, where overhead wires would interfere with double-stacked freight operations. (Search for "Battery powered passenger trains or see the following web sites.)

http://networkrailmediacentre.co.uk/News-Releases/Batteries-included-Prototype-battery-powered-train-carries-passengers-for-first-time-2230.aspx
http://www.greenoptimistic.com/battery-powered-trains-uk/
http://www.reuters.com/video/2015/02/02/space-age-swedish-shower-cuts-water-cons?videoId=363072111&videoChannel=74&channelName=Environment
http://www.railway-technology.com/news/newsuks-first-battery-powered-train-enters-revenue-service-4489154

Item 6, construction of an automated subway line from Westport to Penn Station, is required to provide a rail bridge for the Central Light Rail between Camden and Penn Stations while the Howard Street Tunnel is rebuilt as item 8. Operating on the current light rail tracks north from Westport, the line enters a portal south of Camden Station imbedded in a raised berm and elevated to protect the tunnel from storm surge flooding. This requires a new Ostend Street Station to replace the one at Hamburg Street. The subway tunnel would run under Howard, Pratt, Light, and St. Paul Streets, through Charles Center and north under St. Paul. The north end of the tunnel is at Chase Street and Fallsway (east of the Jones Falls). The subway will elevate over the Penn Line to the north side of Penn Station. From Penn Station, the line would continue west with a service track crossing the Jones Falls to use the current Light Rail yard, and an eventual

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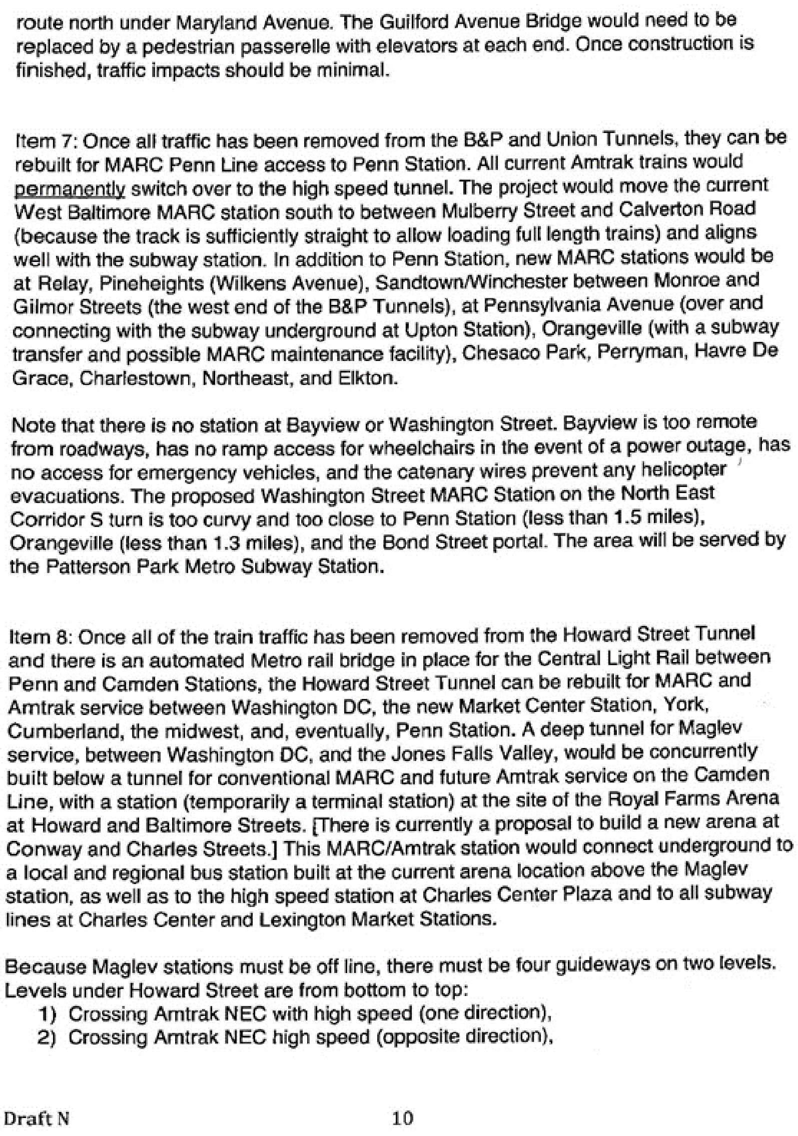

route north under Maryland Avenue. The Guilford Avenue Bridge would need to be replaced by a pedestrian passerelle with elevators at each end. Once construction is finished, traffic impacts should be minimal.

Item 7: Once all traffic has been removed from the B&P and Union Tunnels, they can be rebuilt for MARC Penn Line access to Penn Station. All current Amtrak trains would permanently switch over to the high speed tunnel. The project would move the current West Baltimore MARC station south to between Mulberry Street and Calverton Road (because the track is sufficiently straight to allow loading full length trains) and aligns well with the subway station. In addition to Penn Station, new MARC stations would be at Relay, Pineheights (Wilkens Avenue), Sandtown/Winchester between Monroe and Gilmor Streets (the west end of the B&P Tunnels), at Pennsylvania Avenue (over and connecting with the subway underground at Upton Station), Orangeville (with a subway transfer and possible MARC maintenance facility), Chesaco Park, Perryman, Havre De Grace, Charlestown, Northeast, and Elkton.

Note that there is no station at Bayview or Washington Street. Bayview is too remote from roadways, has no ramp access for wheelchairs in the event of a power outage, has no access for emergency vehicles, and the catenary wires prevent any helicopter evacuations. The proposed Washington Street MARC Station on the North East Corridor S turn is too curvy and too close to Penn Station (less than 1.5 miles), Orangeville (less than 1.3 miles), and the Bond Street portal. The area will be served by the Patterson Park Metro Subway Station.

Item 8: Once all of the train traffic has been removed from the Howard Street Tunnel and there is an automated Metro rail bridge in place for the Central Light Rail between Penn and Camden Stations, the Howard Street Tunnel can be rebuilt for MARC and Amtrak service between Washington DC, the new Market Center Station, York, Cumberland, the midwest, and, eventually, Penn Station. A deep tunnel for Maglev service, between Washington DC, and the Jones Falls Valley, would be concurrently built below a tunnel for conventional MARC and future Amtrak service on the Camden Line, with a station (temporarily a terminal station) at the site of the Royal Farms Arena at Howard and Baltimore Streets. [There is currently a proposal to build a new arena at Conway and Charles Streets.] This MARC/Amtrak station would connect underground to a local and regional bus station built at the current arena location above the Maglev station, as well as to the high speed station at Charles Center Plaza and to all subway lines at Charles Center and Lexington Market Stations.

Because Maglev stations must be off line, there must be four guideways on two levels. Levels under Howard Street are from bottom to top:

1) Crossing Amtrak NEC with high speed (one direction),
2) Crossing Amtrak NEC high speed (opposite direction),

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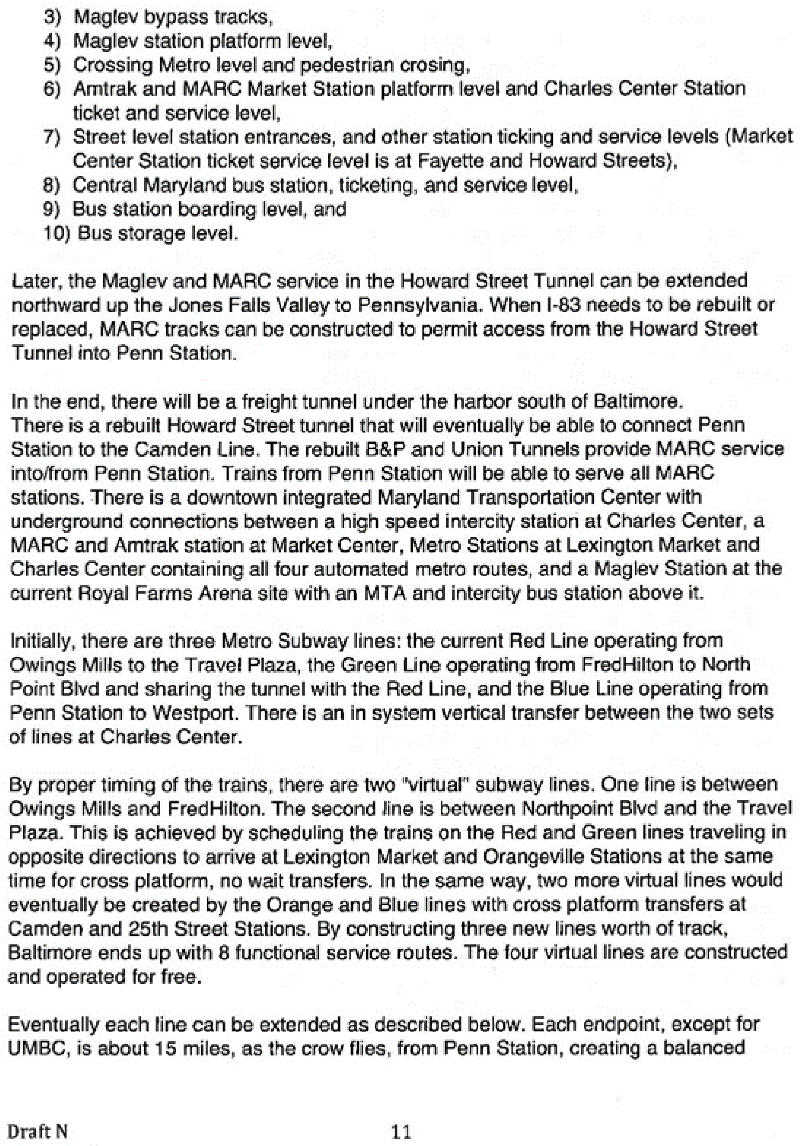

3) Maglev bypass tracks,
4) Maglev station platform level,
5) Crossing Metro level and pedestrian crosing,
6) Amtrak and MARC Market Station platform level and Charles Center Station ticket and service level,
7) Street level station entrances, and other station ticking and service levels (Market Center Station ticket service level is at Fayette and Howard Streets),
8) Central Maryland bus station, ticketing, and service level,
9) Bus station boarding level, and
10) Bus storage level.

Later, the Maglev and MARC service in the Howard Street Tunnel can be extended northward up the Jones Falls Valley to Pennsylvania. When I-83 needs to be rebuilt or replaced, MARC tracks can be constructed to permit access from the Howard Street Tunnel into Penn Station.

In the end, there will be a freight tunnel under the harbor south of Baltimore. There is a rebuilt Howard Street tunnel that will eventually be able to connect Penn Station to the Camden Line. The rebuilt B&P and Union Tunnels provide MARC service into/from Penn Station. Trains from Penn Station will be able to serve all MARC stations. There is a downtown integrated Maryland Transportation Center with underground connections between a high speed intercity station at Charles Center, a MARC and Amtrak station at Market Center, Metro Stations at Lexington Market and Charles Center containing all four automated metro routes, and a Maglev Station at the current Royal Farms Arena site with an MTA and intercity bus station above it.

Initially, there are three Metro Subway lines: the current Red Line operating from Owings Mills to the Travel Plaza, the Green Line operating from FredHilton to North Point Blvd and sharing the tunnel with the Red Line, and the Blue Line operating from Penn Station to Westport. There is an in system vertical transfer between the two sets of lines at Charles Center.

By proper timing of the trains, there are two "virtual" subway lines. One line is between Owings Mills and FredHilton. The second line is between Northpoint Blvd and the Travel Plaza. This is achieved by scheduling the trains on the Red and Green lines traveling in opposite directions to arrive at Lexington Market and Orangeville Stations at the same time for cross platform, no wait transfers. In the same way, two more virtual lines would eventually be created by the Orange and Blue lines with cross platform transfers at Camden and 25th Street Stations. By constructing three new lines worth of track, Baltimore ends up with 8 functional service routes. The four virtual lines are constructed and operated for free.

Eventually each line can be extended as described below. Each endpoint, except for UMBC, is about 15 miles, as the crow flies, from Penn Station, creating a balanced

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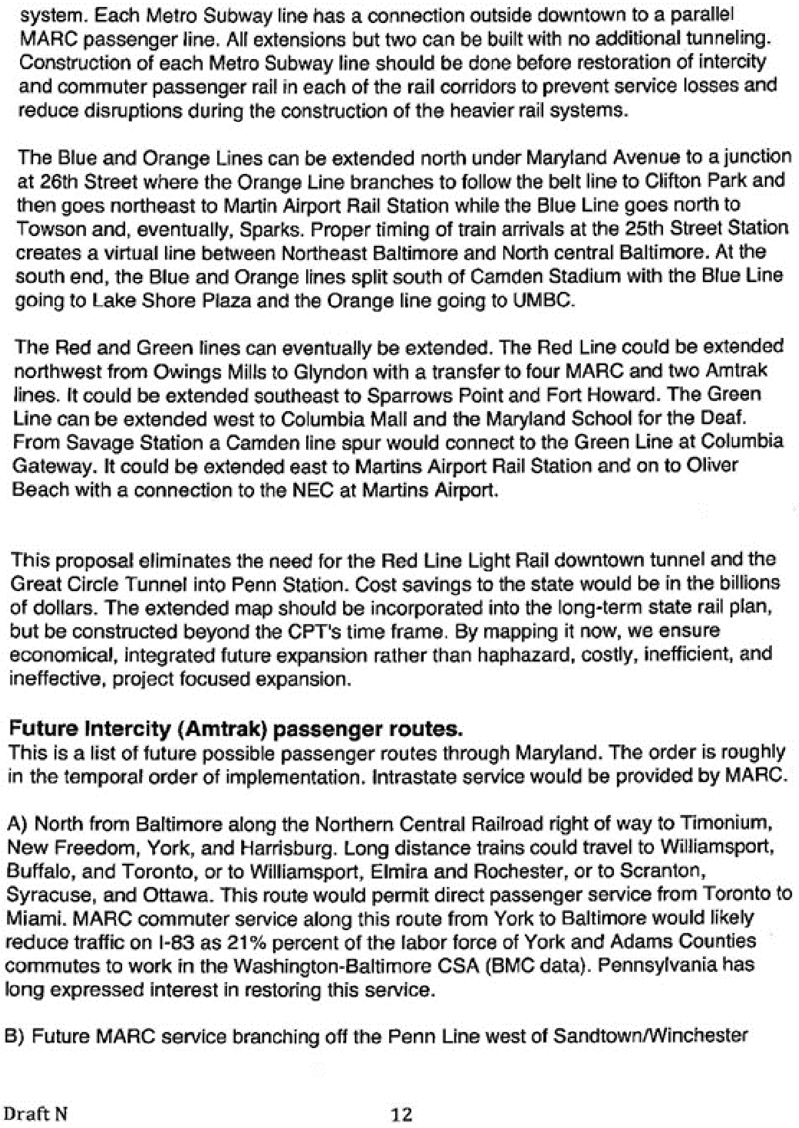

system. Each Metro Subway line has a connection outside downtown to a parallel MARC passenger line. All extensions but two can be built with no additional tunneling. Construction of each Metro Subway line should be done before restoration of intercity and commuter passenger rail in each of the rail corridors to prevent service losses and reduce disruptions during the construction of the heavier rail systems.

The Blue and Orange Lines can be extended north under Maryland Avenue to a junction at 26th Street where the Orange Line branches to follow the belt line to Clifton Park and then goes northeast to Martin Airport Rail Station while the Blue Line goes north to Towson and, eventually, Sparks. Proper timing of train arrivals at the 25th Street Station creates a virtual line between Northeast Baltimore and North central Baltimore. At the south end, the Blue and Orange lines split south of Camden Stadium with the Blue Line going to Lake Shore Plaza and the Orange line going to UMBC.

The Red and Green lines can eventually be extended. The Red Line could be extended northwest from Owings Mills to Glyndon with a transfer to four MARC and two Amtrak lines. It could be extended southeast to Sparrows Point and Fort Howard. The Green Line can be extended west to Columbia Mall and the Maryland School for the Deaf. From Savage Station a Camden line spur would connect to the Green Line at Columbia Gateway. It could be extended east to Martins Airport Rail Station and on to Oliver Beach with a connection to the NEC at Martins Airport.

This proposal eliminates the need for the Red Line Light Rail downtown tunnel and the Great Circle Tunnel into Penn Station. Cost savings to the state would be in the billions of dollars. The extended map should be incorporated into the long-term state rail plan, but be constructed beyond the CPT's time frame. By mapping it now, we ensure economical, integrated future expansion rather than haphazard, costly, inefficient, and ineffective, project focused expansion.

Future Intercity (Amtrak) passenger routes.

This is a list of future possible passenger routes through Maryland. The order is roughly in the temporal order of implementation. Intrastate service would be provided by MARC.

A) North from Baltimore along the Northern Central Railroad right of way to Timonium, New Freedom, York, and Harrisburg. Long distance trains could travel to Williamsport, Buffalo, and Toronto, or to Williamsport, Elmira and Rochester, or to Scranton, Syracuse, and Ottawa. This route would permit direct passenger service from Toronto to Miami. MARC commuter service along this route from York to Baltimore would likely reduce traffic on I-83 as 21% percent of the labor force of York and Adams Counties commutes to work in the Washington-Baltimore CSA (BMC data). Pennsylvania has long expressed interest in restoring this service.

B) Future MARC service branching off the Penn Line west of Sandtown/Winchester

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Station at Fulton Junction would run along the Western Maryland right of way serving Coppin State University, Northern Parkway, Owings Mills, Glyndon, Hampstead, Manchester, Hanover, and Gettysburg. Implementation of this MARC service north of Glydon would be concurrent with the state of Pennsylvania rebuilding a railroad trestle across the Susquehanna River at Columbia to establish Amtrak service from Washington through Baltimore, York, Lancaster, Reading, Allentown, Morristown, to Newark, and either Hoboken or Pennsylvania Station New York. This route will expand Amtrak service to new cities and provide an alternative route to the crowded NEC for trains coming from south of Washington. MARC service south of Glydon can be initiated when the Western Maryland Greenspring Valley branch opens to Owings Mills.

Amtrak service would operate to the west along the Western Maryland right of way to Westminster, Hagerstown and Cumberland extending west to Pittsburgh, Cleveland, Detroit and Chicago; or Columbus, Indianapolis, St. Louis, and on to Denver and points west. MARC service would connect Cumberland, Hagerstown, Thurmont, Westminster, Glyndon (with a connection to the Baltimore Subway), Owings Mills, Stevenson, Northern Parkway (in the Jones Falls valley), and intermediate stations to Market Center Station and on to Annapolis.

A new track through Parr's Ridge from Finksburg to New Windsor, bypassing Westminster, under Catoctin Mountain (avoiding Camp David) and South Mountain between Thurmont and Smithburg could carry mainline freight between Chicago and the Port of Baltimore. Baltimore does not get freight from the mid-west anymore because steep grades and sharp curves make the routing unsuitable. This bypass track would change that. Our port is closer to Chicago than any other Atlantic port, and it is the most efficient port in the nation. By eliminating these grades and curves, we could expect a large increase in port traffic. This, in turn, could attract new factories in our region, as manufacturing has been increasing again in the United States. MARC and Amtrak would serve Westminster along the existing Maryland and Midland track, and would not use the Parr's Ridge cut.

If and when a bridge is built across the Chesapeake Bay at Hart-Miller Island, it should be provided with space for a rail component that would service Chestertown and Dover.

C) When I-83 needs to be rebuilt or replaced, it will be possible to connect Penn Station to the Howard Street Tunnel,. This would permit MARC trains to run from Penn Station through the Howard Street tunnel to the Old Main Line and west with service to Lansdowne, Ellicott City, Sykesville, Mt Airy, Monocacy, Frederick, and intermediate points. Intercity passenger traffic could go farther west to Cumberland; Cincinnati; St. Louis; Springfield, Missouri; and westward to Tulsa, Oklahoma City; and El Paso.

D) Intercity passenger service can be extended from the Northeast Corridor at Perryville northward along the Susquehanna River (Port Road) to Columbia, Pennsylvania, and with a rebuilt junction, on to Lancaster, Reading, and Allentown.

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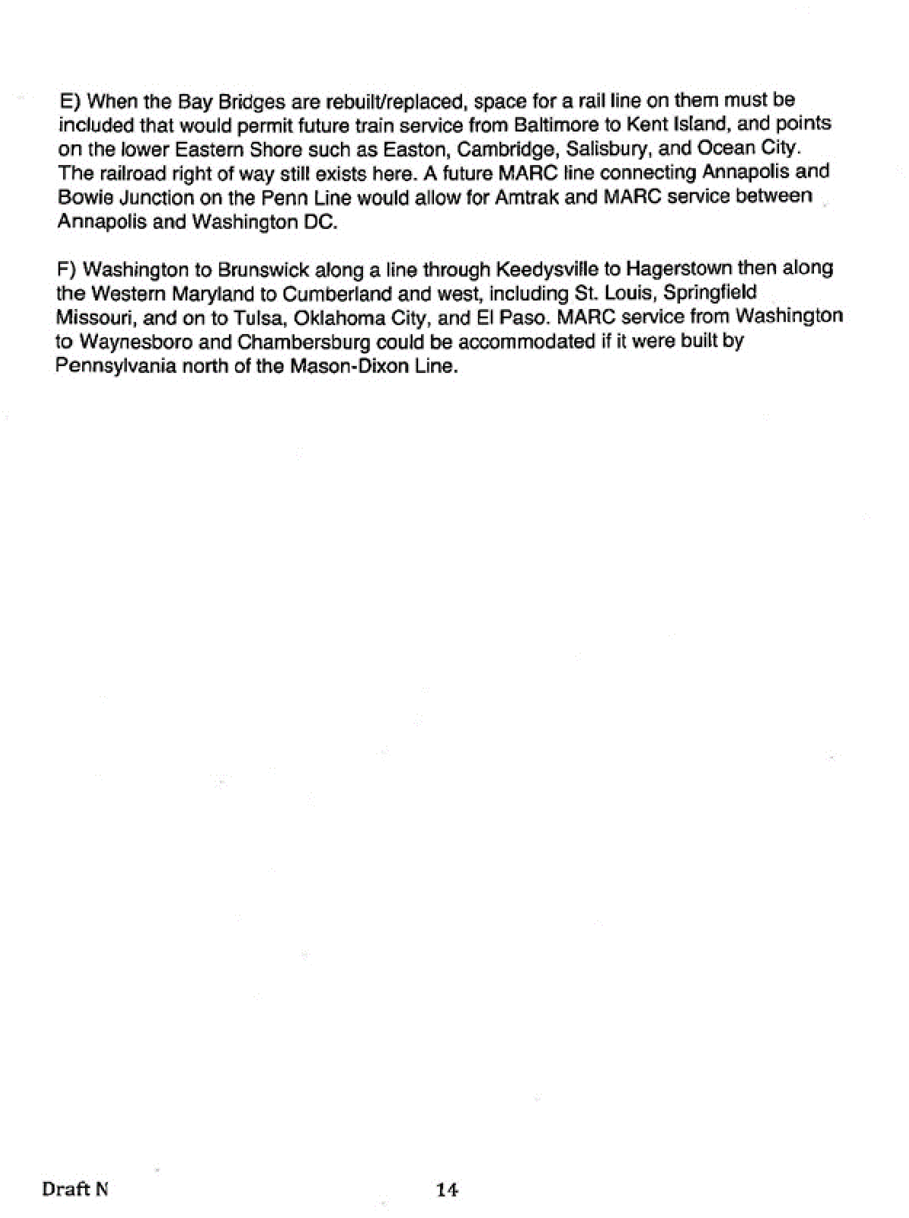


E) When the Bay Bridges are rebuilt/replaced, space for a rail line on them must be included that would permit future train service from Baltimore to Kent Island, and points on the lower Eastern Shore such as Easton, Cambridge, Salisbury, and Ocean City. The railroad right of way still exists here. A future MARC line connecting Annapolis and Bowie Junction on the Penn Line would allow for Amtrak and MARC service between Annapolis and Washington DC.

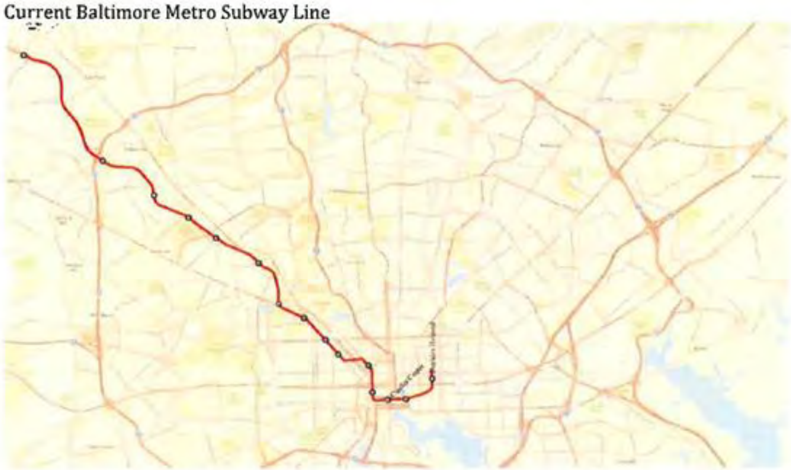
F) Washington to Brunswick along a line through Keedysville to Hagerstown then along the Western Maryland to Cumberland and west, including St. Louis, Springfield Missouri, and on to Tulsa, Oklahoma City, and El Paso. MARC service from Washington to Waynesboro and Chambersburg could be accommodated if it were built by Pennsylvania north of the Mason-Dixon Line.

COMMENTS

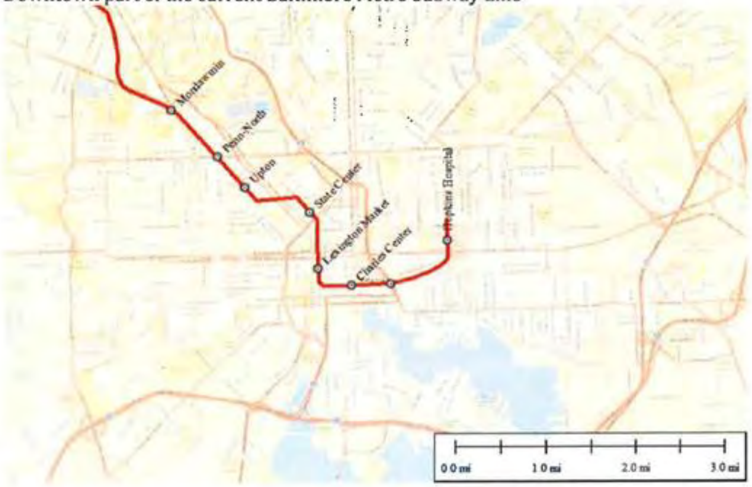
RESPONSES

Maps

Current Baltimore Metro Subway Line

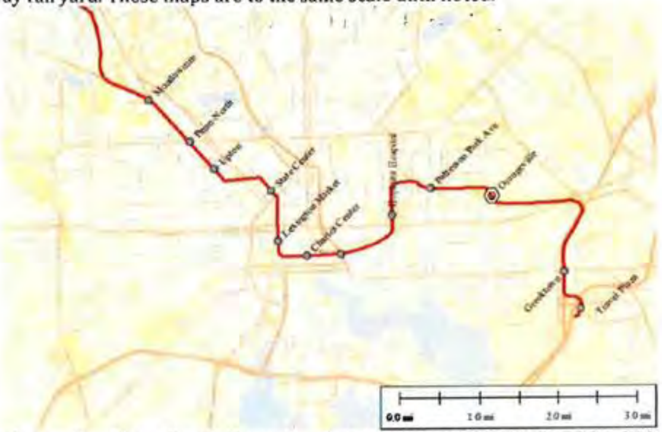


Downtown part of the current Baltimore Metro Subway Line

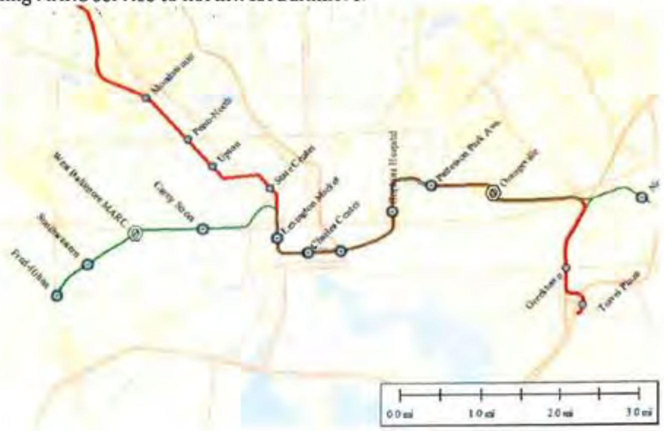


COMMENTS	RESPONSES

Proposed Phase 1, eastside extension of current line to the Travel Plaza. The hexagon at Orangeville denotes a subway/MARC connection. Orangeville would also be the location of a subway rail yard. These maps are to the same scale until noted.



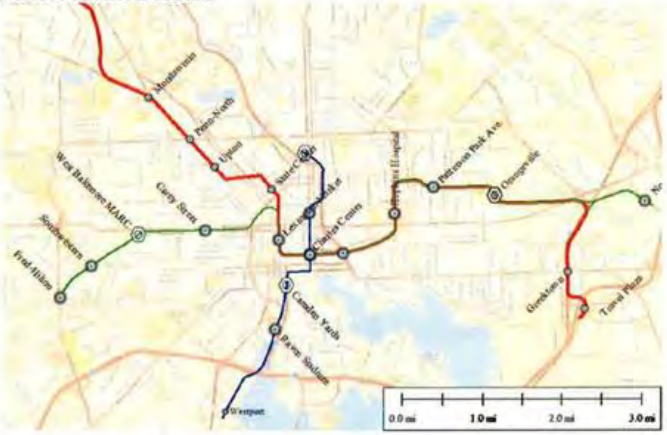
Metro Subway after Phase 3 with Green Line between North Point Blvd and FredHilton. There is a second Metro Subway/MARC connection at West Baltimore Station. The Green Line will provide a rail bridge for MARC passengers around Penn Station while the B&P and Union Tunnels are rebuilt. There is a virtual line between Owings Mills and FredHilton connecting MARC service to northwest Baltimore.



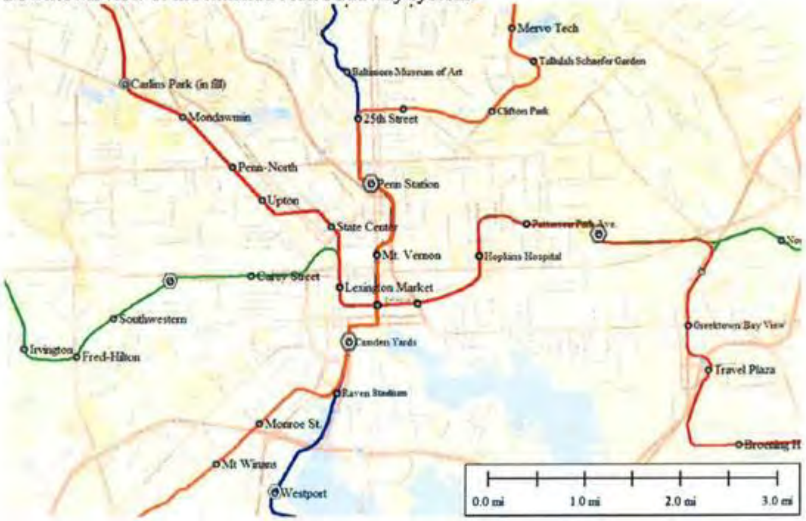
COMMENTS

RESPONSES

Metro Subway after Phase 6, construction of the Blue Line between Penn Station and Westport. There are two new Metro Subway/MARC connections at Camden and Penn Stations. The Blue Line will provide a rail bridge for Light Rail passengers while the Howard Street Tunnel is rebuilt.



Downtown view of the finished Metro Subway system.

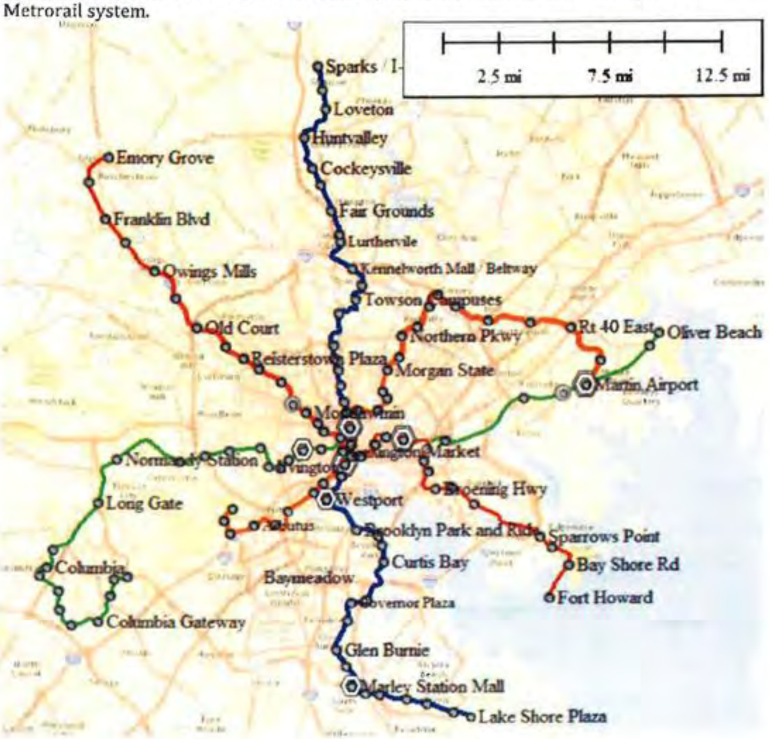


Draft N 17

COMMENTS

RESPONSES

Map of the proposed, complete Metro Subway system. On average, each line extends about 15 miles from Penn Station; about the same geographic extent as the Washington DC Metrorail system.

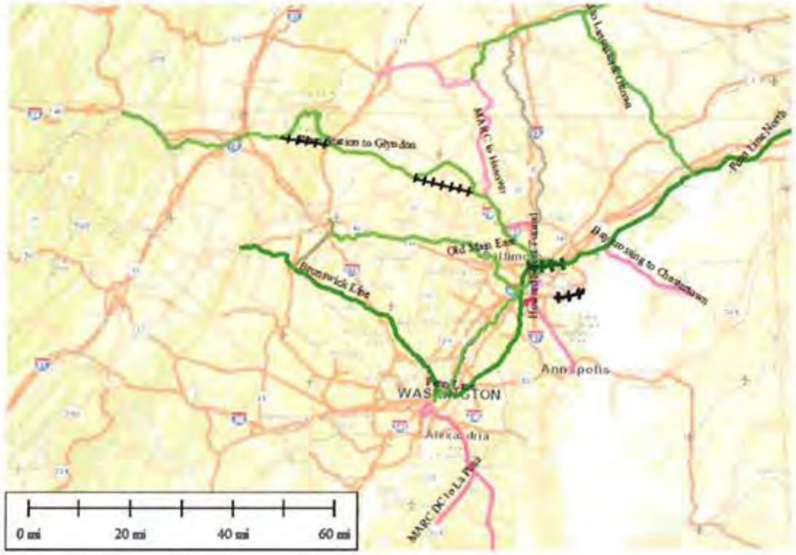


Draft N 18

COMMENTS

RESPONSES

Regional view of the proposed, expanded intercity (Amtrak) and commuter (MARC) passenger routes in the Baltimore Region. Current lines are in wide, bright green. Proposed lines are in a light green (Amtrak and MARC) and purple (MARC only). Shown in black is a new freight tunnel under Baltimore Harbor (connecting freight routes are currently in service but are not shown) and new freight lines Parr's Ridge and South Mountain. See text for a description of routes and destinations. The new, high-speed trackage through Charles Center is shown in dark green with cross hatches. See text for a description of routes and destinations.



Draft N 19

COMMENTS

RESPONSES

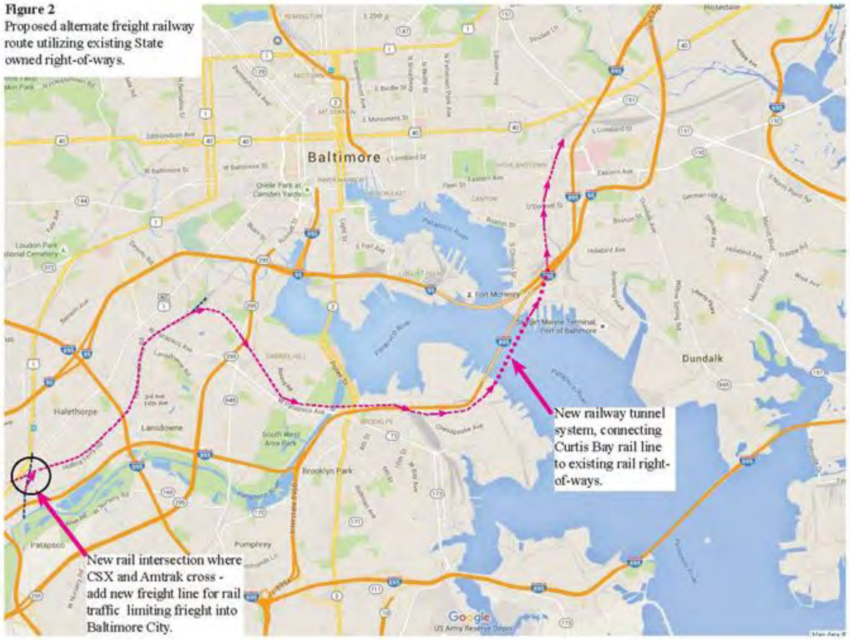


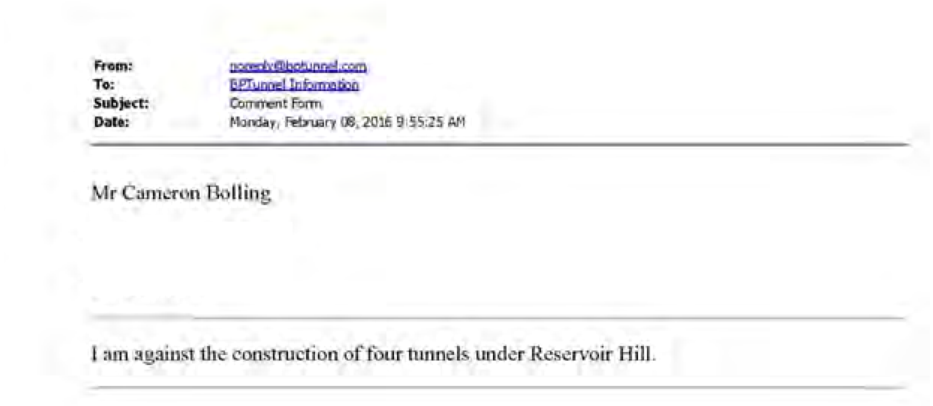
Figure 2
Proposed alternate freight railway route utilizing existing State owned right-of-ways.

New railway tunnel system, connecting Curtis Bay rail line to existing rail right-of-ways.

New rail intersection where CSX and Amtrak cross - add new freight line for rail traffic limiting frieght into Baltimore City.

COMMENTS

DEIS Comment 12:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Monday, February 08, 2016 9:55:25 AM

Mr Cameron Bolling

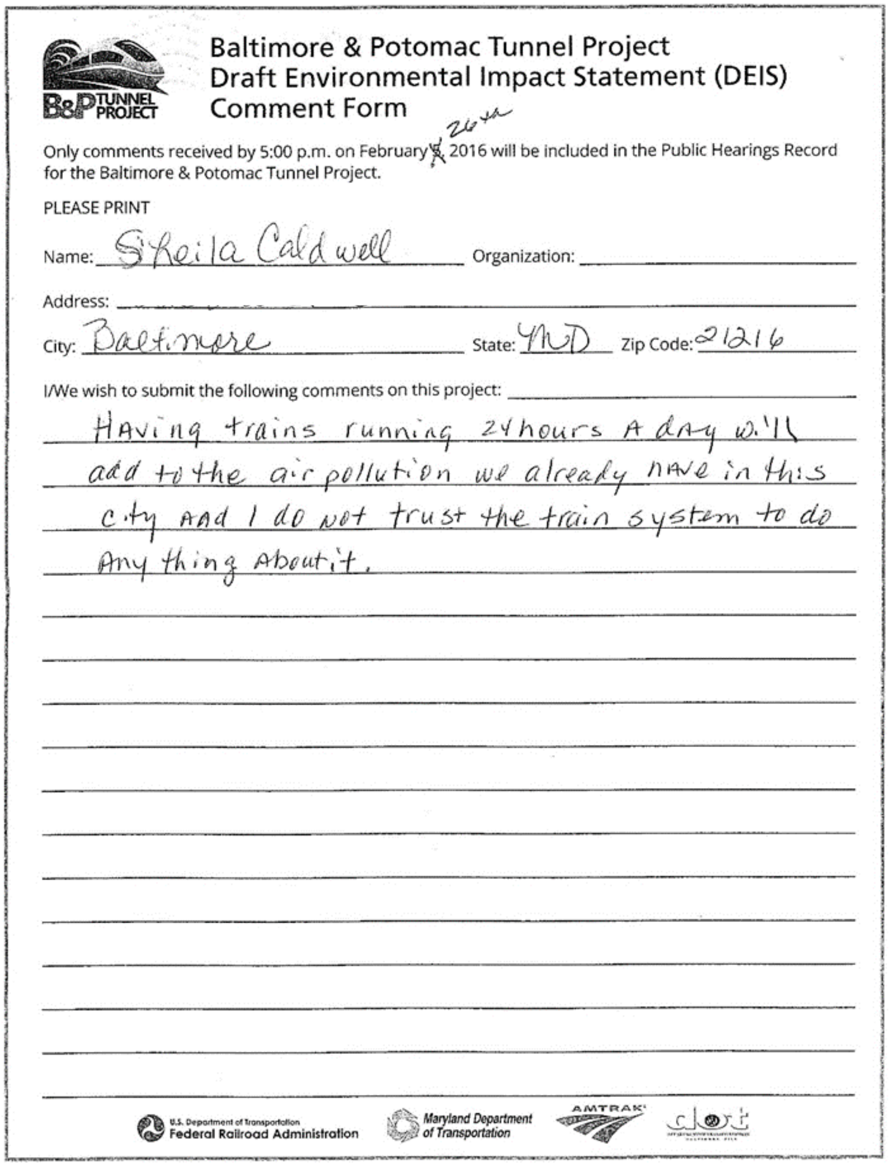
1 I am against the construction of four tunnels under Reservoir Hill.

RESPONSES

Response to Comment 1:
Thank you for your comment.

COMMENTS

DEIS Comment 13:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February ~~8~~ 26th, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Sheila Caldwell Organization:

Address:

City: Baltimore State: MD Zip Code: 21216

I/We wish to submit the following comments on this project:

1 Having trains running 24 hours A day will add to the air pollution we already have in this city
2 And I do not trust the train system to do Any thing About it.

U.S. Department of Transportation Federal Railroad Administration · Maryland Department of Transportation · AMTRAK · CDOT

RESPONSES

Response to Comment 1:
Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

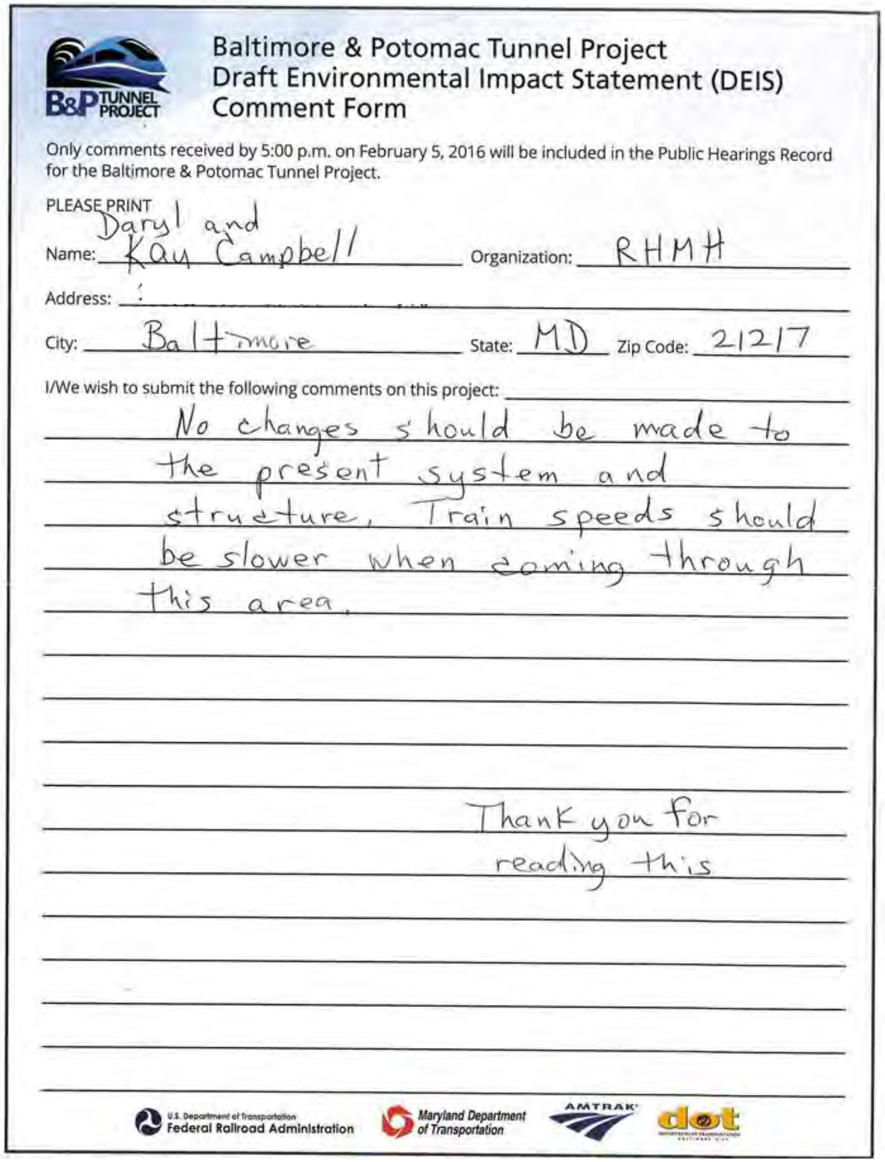
The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am to 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**.

Response to Comment 2:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

RESPONSES

DEIS Comment 14:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Daryl and Kay Campbell Organization: RHMH

Address: [redacted]

City: Baltimore State: MD Zip Code: 21217

I/We wish to submit the following comments on this project:

1 No changes should be made to the present system and structure, Train speeds should be slower when coming through this area.

Thank you for reading this

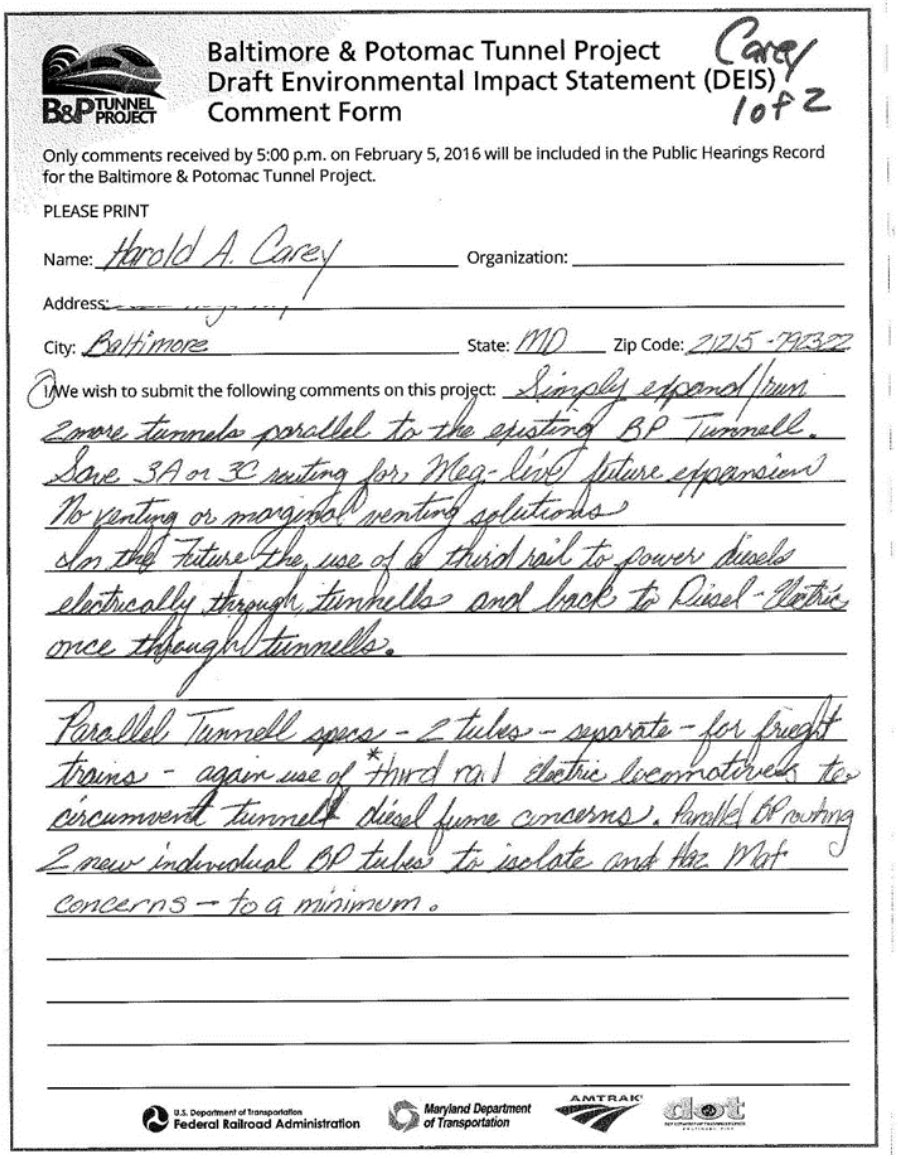
U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK

Response to Comment 1:
Alternative 1: No-Build does not meet the Project Need or goals of the Project; therefore, it is not identified as the Preferred Alternative in this FEIS. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

The existing B&P Tunnel is not suited for modern high-speed usage due to the horizontal and vertical track alignments. The build alternatives would allow trains to travel at higher speeds, and due to its updated design and modern construction, it would improve travel times, capacity, reliability, and safety. The tunnel would be equipped with Automatic Train Control (ATC) and Positive Train Control (PTC) systems, which use computer systems to control the speed of both passenger and freight trains within the tunnel.

COMMENTS

DEIS Comment 15:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Carey
1 of 2

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Harold A. Carey Organization:
Address: [redacted]
City: Baltimore State: MD Zip Code: 21215-79322

1 I/We wish to submit the following comments on this project: Simply expand/run
2 more tunnels parallel to the existing BP Tunnell.
Save 3A or 3C routing for Meg-lev future expansion
2 No venting or marginal venting solutions
In the Future the use of a third rail to power diesels
3 electrically through tunnells and back to Diesel-Electric
once through tunnells.

Parallel Tunnell specs - 2 tubes - separate - for freight
trains - again use of *third rail electric locomotives to
circumvent tunnell diesel fume concerns. Parallel BP routing
2 new individual BP tubes to isolate and Haz Mat
concerns - to a minimum.

U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK

RESPONSES

Response to Comment 1:
The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

A Maglev train would not utilize existing or planned Amtrak infrastructure. The design of such a system requires significantly different rights-of-way and infrastructure. The design criteria for Maglev are extremely restrictive and would only be achievable on new alignments.

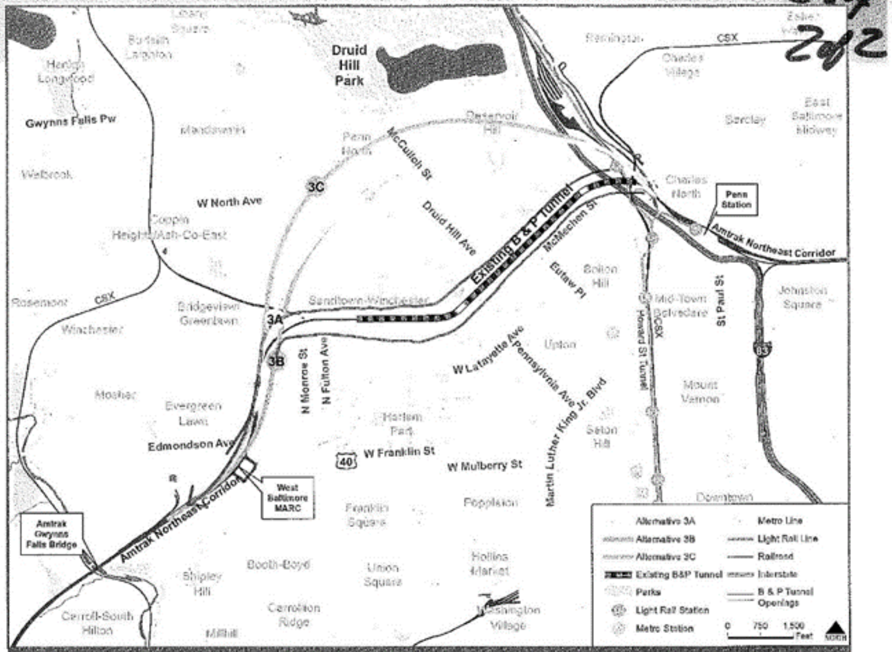
Response to Comment 2:
Ventilation facilities are required in order to meet current safety industry standards (NFPA 130) for projected NEC FUTURE train demand headway, and to ensure proper ventilation of the proposed tunnels. The purpose of the ventilation facilities is to pull fresh air into the tunnel and ventilate the tunnel air to the outside.

Response to Comment 3:
The type of locomotive traveling through the B&P Tunnel is determined by the train service operator. As per the 2040 projections, of the 388 daily vehicles running through the tunnel, 222 would be electric (Acela, NE Regional, and Metropolitan) and 166 would be diesel (2 freight and 164 MARC). Please refer to **Chapter VI** for additional information. Installing a third electrified rail in the new tunnels would add a third energy delivery system to the tunnel design and require MARC to procure a fleet of custom dual-powered locomotives. Addition of the third rail system would add another layer of complexity (and expense) to ongoing maintenance to the tunnels and custom locomotives. Freight locomotives, to the extent they are used, would also need to be dual powered.

COMMENTS

RESPONSES

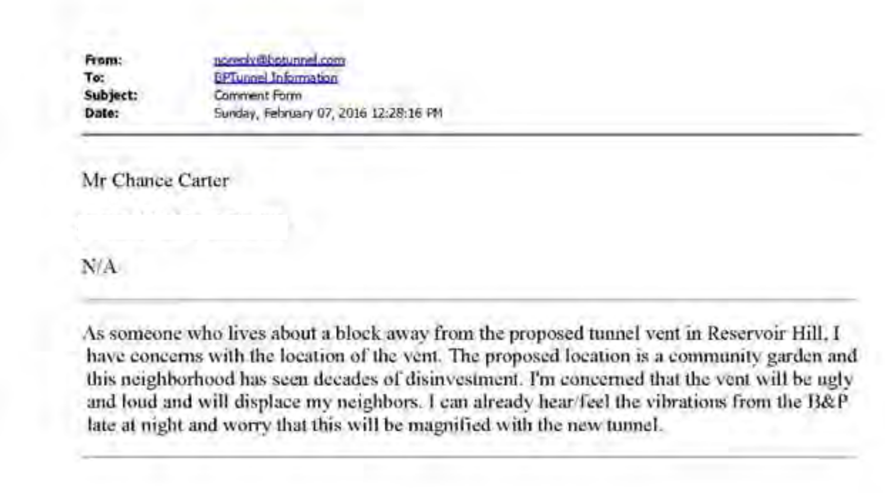
Carey 2of2



Alternatives 3A, 3B, and 3C are still under consideration and are continuing to be evaluated and discussed with agencies and the public. A Preferred Alternative will be identified based on comments received during the Public Hearing and the DEIS Comment Period.

COMMENTS

DEIS Comment 16:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Sunday, February 07, 2016 12:28:16 PM

Mr Chance Carter

N/A

As someone who lives about a block away from the proposed tunnel vent in Reservoir Hill, I
1 have concerns with the location of the vent. The proposed location is a community garden and
this neighborhood has seen decades of disinvestment. I'm concerned that the vent will be ugly
2 and loud and will displace my neighbors. I can already hear/feel the vibrations from the B&P
late at night and worry that this will be magnified with the new tunnel.

RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

The three ventilation facilities would be subject to the operational noise level standards included in the Noise Regulation of the Health Code of Baltimore City § 9-206 Noise Regulation, 2015. This regulation provides the noise limits for manufacturing, commercial, and residential zones in Baltimore City– depending on the source of noise and the types of adjacent land uses. For noise generated within residential zones, there is a limit of 55 dBA at any point on the property line of the use. The design standard for the ventilation facilities would limit the outdoor noise level, when the fans are in operation, to L_{max} 50 dBA at the facility property lines. 50 dBA is approximately the noise produced by an indoor air conditioner at a distance of three feet.

Response to Comment 2:
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

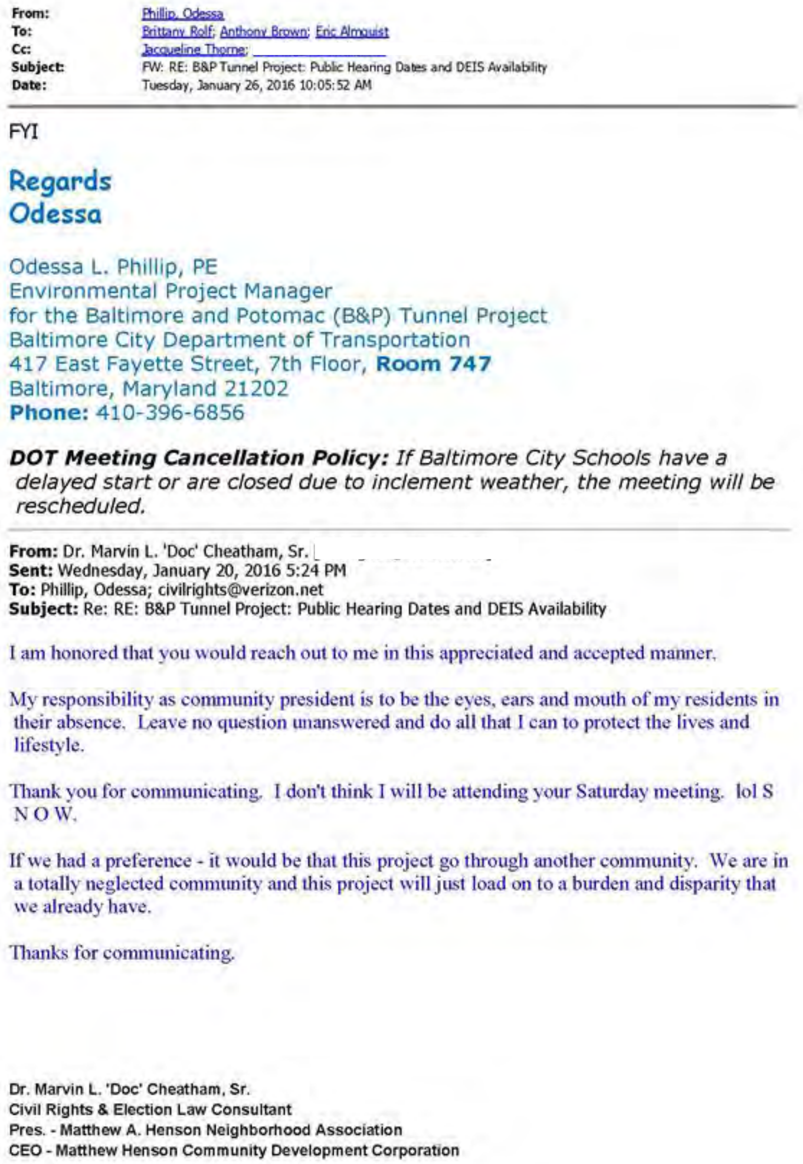
Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM

COMMENTS	**RESPONSES**
	would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer. Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold. All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

COMMENTS

DEIS Comment 17:



From: Phillip, Odessa
To: Brittany Rolf; Anthony Brown; Eric Almquist
Cc: Jacqueline Thorne;
Subject: FW: RE: B&P Tunnel Project: Public Hearing Dates and DEIS Availability
Date: Tuesday, January 26, 2016 10:05:52 AM

FYI

Regards
Odessa

Odessa L. Phillip, PE
Environmental Project Manager
for the Baltimore and Potomac (B&P) Tunnel Project
Baltimore City Department of Transportation
417 East Fayette Street, 7th Floor, **Room 747**
Baltimore, Maryland 21202
Phone: 410-396-6856

DOT Meeting Cancellation Policy: *If Baltimore City Schools have a delayed start or are closed due to inclement weather, the meeting will be rescheduled.*

From: Dr. Marvin L. 'Doc' Cheatham, Sr.
Sent: Wednesday, January 20, 2016 5:24 PM
To: Phillip, Odessa; civilrights@verizon.net
Subject: Re: RE: B&P Tunnel Project: Public Hearing Dates and DEIS Availability

I am honored that you would reach out to me in this appreciated and accepted manner.

My responsibility as community president is to be the eyes, ears and mouth of my residents in their absence. Leave no question unanswered and do all that I can to protect the lives and lifestyle.

Thank you for communicating. I don't think I will be attending your Saturday meeting. lol S N O W.

If we had a preference - it would be that this project go through another community. We are in a totally neglected community and this project will just load on to a burden and disparity that we already have.

Thanks for communicating.

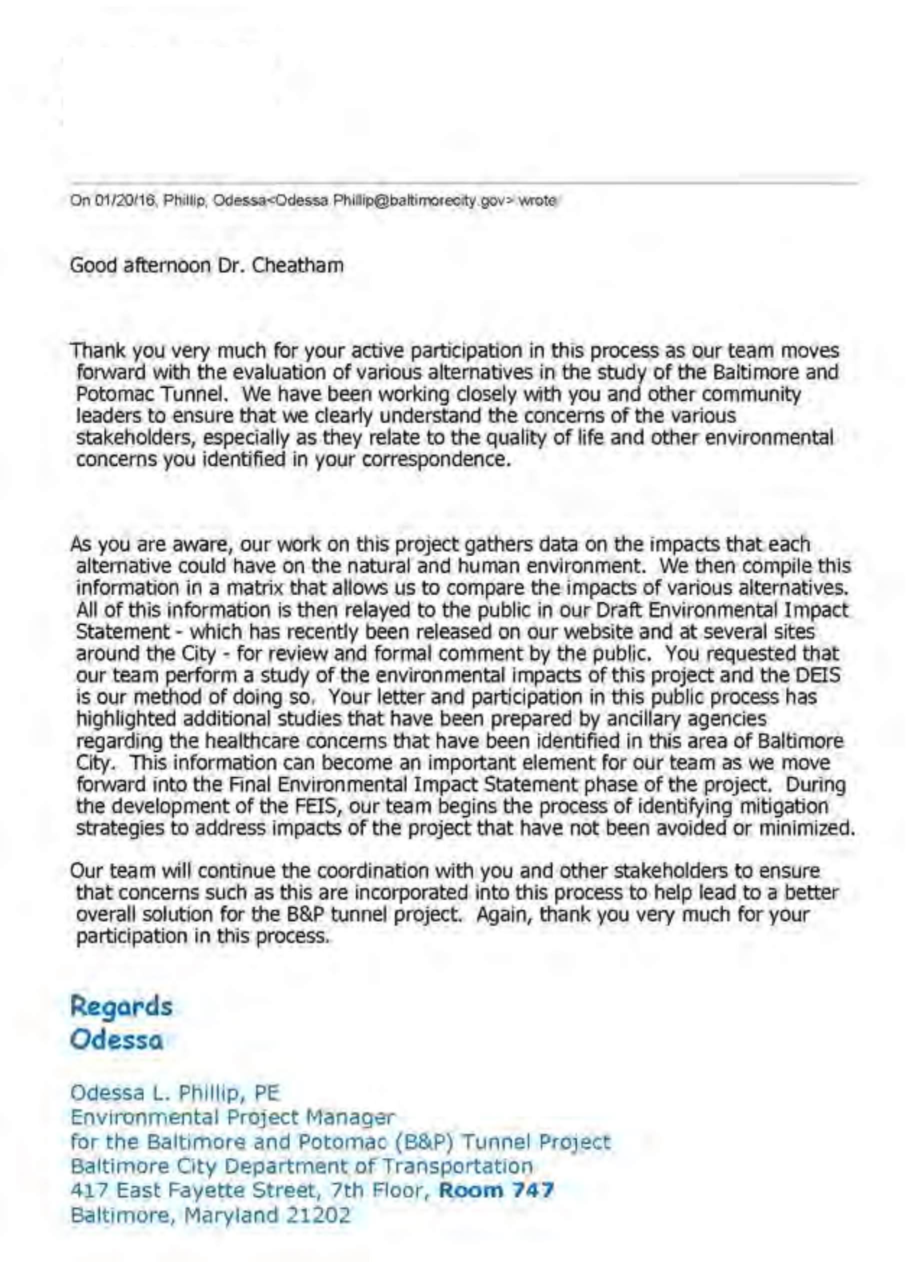
Dr. Marvin L. 'Doc' Cheatham, Sr.
Civil Rights & Election Law Consultant
Pres. - Matthew A. Henson Neighborhood Association
CEO - Matthew Henson Community Development Corporation

RESPONSES

Please refer to response from Odessa Phillip below.

COMMENTS

RESPONSES



On 01/20/16, Phillip, Odessa<Odessa.Phillip@baltimorecity.gov> wrote

Good afternoon Dr. Cheatham

Thank you very much for your active participation in this process as our team moves forward with the evaluation of various alternatives in the study of the Baltimore and Potomac Tunnel. We have been working closely with you and other community leaders to ensure that we clearly understand the concerns of the various stakeholders, especially as they relate to the quality of life and other environmental concerns you identified in your correspondence.

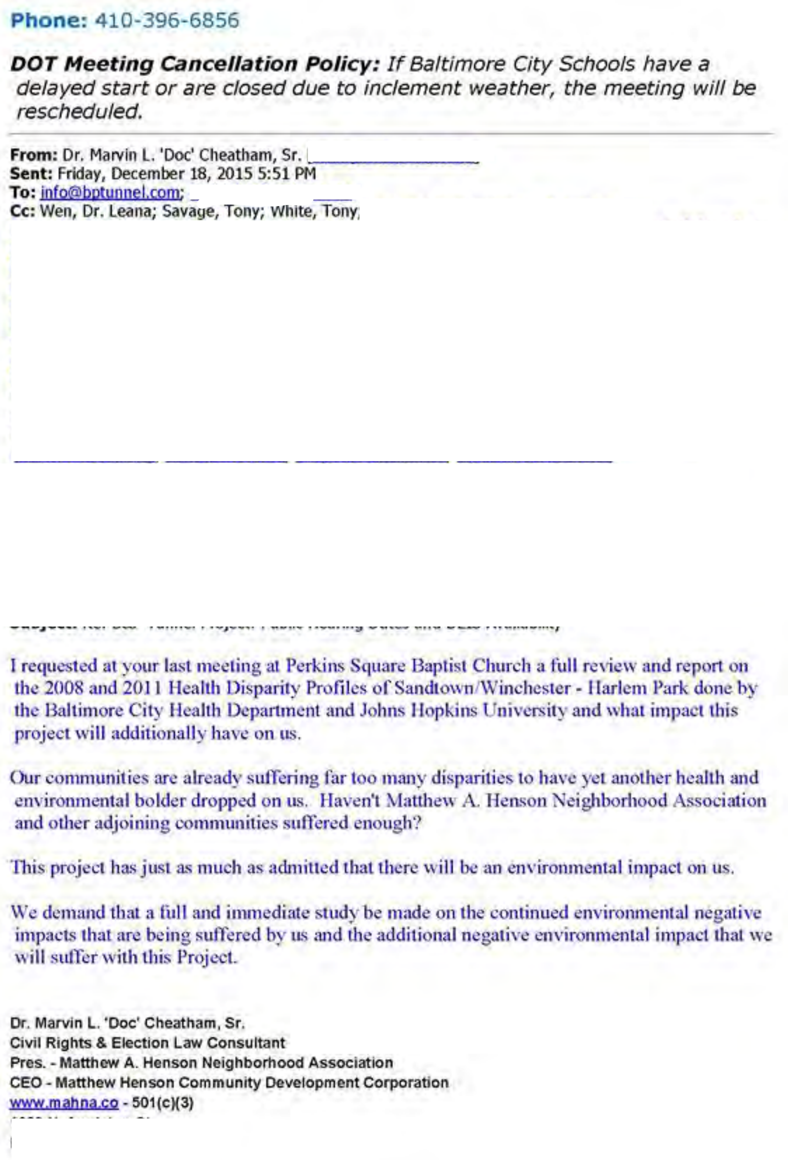
As you are aware, our work on this project gathers data on the impacts that each alternative could have on the natural and human environment. We then compile this information in a matrix that allows us to compare the impacts of various alternatives. All of this information is then relayed to the public in our Draft Environmental Impact Statement - which has recently been released on our website and at several sites around the City - for review and formal comment by the public. You requested that our team perform a study of the environmental impacts of this project and the DEIS is our method of doing so. Your letter and participation in this public process has highlighted additional studies that have been prepared by ancillary agencies regarding the healthcare concerns that have been identified in this area of Baltimore City. This information can become an important element for our team as we move forward into the Final Environmental Impact Statement phase of the project. During the development of the FEIS, our team begins the process of identifying mitigation strategies to address impacts of the project that have not been avoided or minimized.

Our team will continue the coordination with you and other stakeholders to ensure that concerns such as this are incorporated into this process to help lead to a better overall solution for the B&P tunnel project. Again, thank you very much for your participation in this process.

Regards
Odessa

Odessa L. Phillip, PE
Environmental Project Manager
for the Baltimore and Potomac (B&P) Tunnel Project
Baltimore City Department of Transportation
417 East Fayette Street, 7th Floor, **Room 747**
Baltimore, Maryland 21202

COMMENTS



Phone: 410-396-6856

DOT Meeting Cancellation Policy: *If Baltimore City Schools have a delayed start or are closed due to inclement weather, the meeting will be rescheduled.*

From: Dr. Marvin L. 'Doc' Cheatham, Sr.
Sent: Friday, December 18, 2015 5:51 PM
To: info@bptunnel.com;
Cc: Wen, Dr. Leana; Savage, Tony; White, Tony;

I requested at your last meeting at Perkins Square Baptist Church a full review and report on the 2008 and 2011 Health Disparity Profiles of Sandtown/Winchester - Harlem Park done by the Baltimore City Health Department and Johns Hopkins University and what impact this project will additionally have on us.

Our communities are already suffering far too many disparities to have yet another health and environmental bolder dropped on us. Haven't Matthew A. Henson Neighborhood Association and other adjoining communities suffered enough?

This project has just as much as admitted that there will be an environmental impact on us.

We demand that a full and immediate study be made on the continued environmental negative impacts that are being suffered by us and the additional negative environmental impact that we will suffer with this Project.

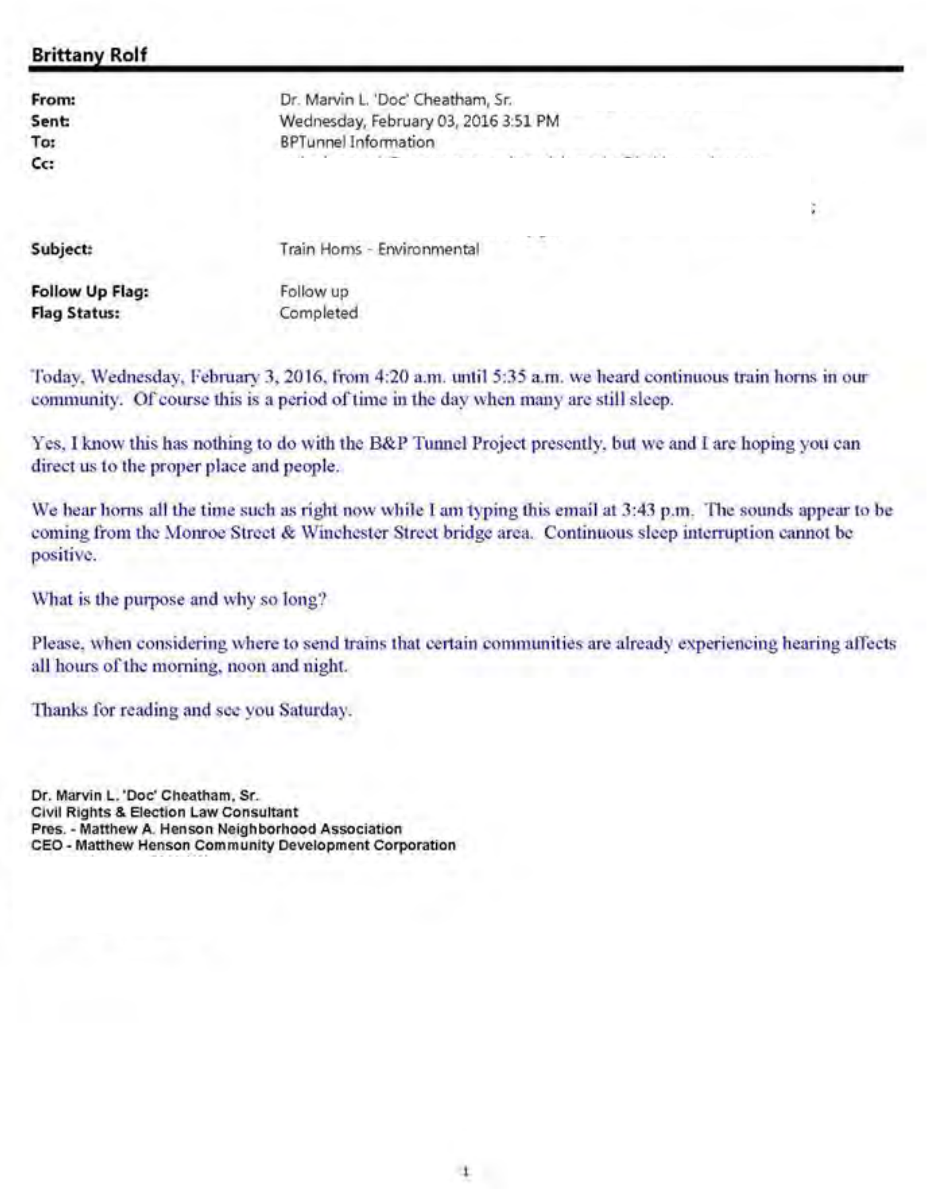
Dr. Marvin L. 'Doc' Cheatham, Sr.
Civil Rights & Election Law Consultant
Pres. - Matthew A. Henson Neighborhood Association
CEO - Matthew Henson Community Development Corporation
www.mahna.co - 501(c)(3)

RESPONSES

Please see previous page for response from Odessa Phillip.

COMMENTS

DEIS Comment 18:



Brittany Rolf

From: Dr. Marvin L. 'Doc' Cheatham, Sr.
Sent: Wednesday, February 03, 2016 3:51 PM
To: BPTunnel Information
Cc:

Subject: Train Horns - Environmental

Follow Up Flag: Follow up
Flag Status: Completed

Today, Wednesday, February 3, 2016, from 4:20 a.m. until 5:35 a.m. we heard continuous train horns in our community. Of course this is a period of time in the day when many are still sleep.

Yes, I know this has nothing to do with the B&P Tunnel Project presently, but we and I are hoping you can direct us to the proper place and people.

We hear horns all the time such as right now while I am typing this email at 3:43 p.m. The sounds appear to be coming from the Monroe Street & Winchester Street bridge area. Continuous sleep interruption cannot be positive.

What is the purpose and why so long?

1 Please, when considering where to send trains that certain communities are already experiencing hearing affects all hours of the morning, noon and night.

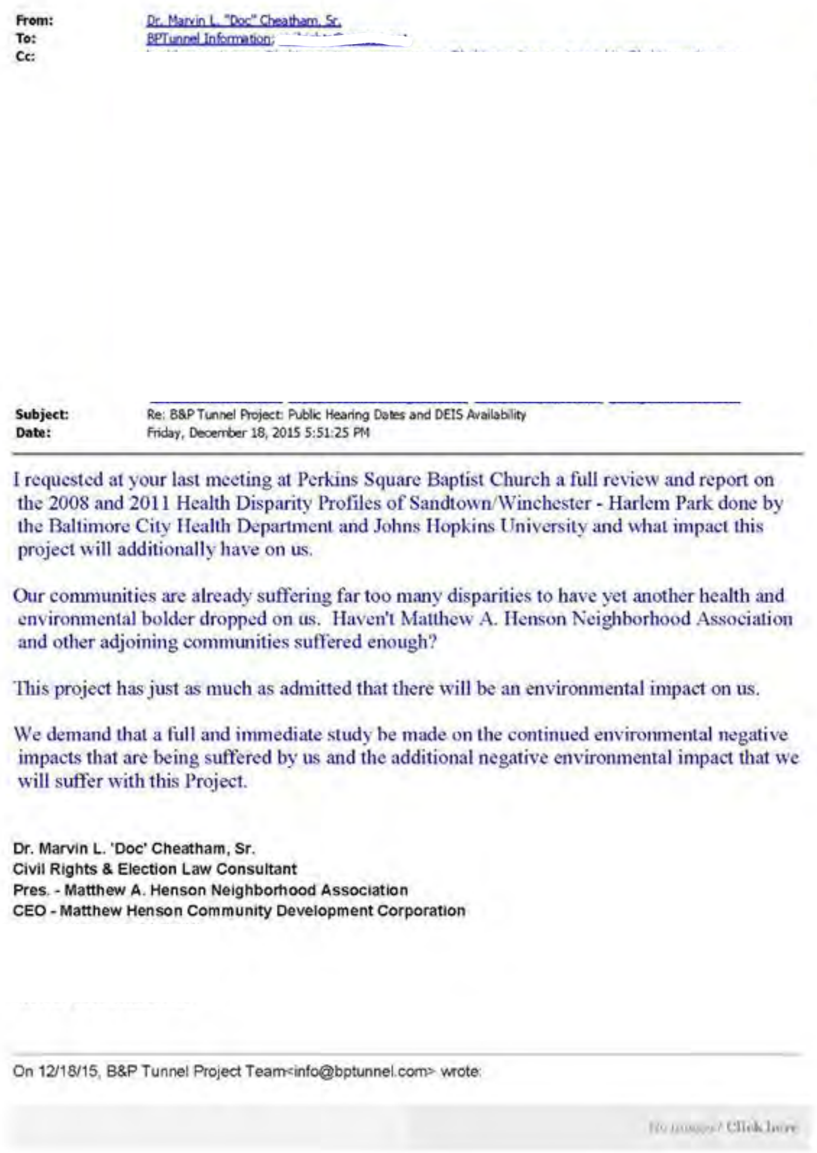
Thanks for reading and see you Saturday.

Dr. Marvin L. 'Doc' Cheatham, Sr.
Civil Rights & Election Law Consultant
Pres. - Matthew A. Henson Neighborhood Association
CEO - Matthew Henson Community Development Corporation

RESPONSES

Response to Comment 1:
The Project has performed an impact analysis for noise following the Federal Transit Administration’s guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. As a result, the Project will design and implement noise barriers to mitigate these anticipated operational noise impacts. Ventilation facilities will be designed with noise attenuation measures.

COMMENTS



From: Dr. Marvin L. "Doc" Cheatham, Sr.
To: BPTunnel Information;
Cc:

Subject: Re: B&P Tunnel Project: Public Hearing Dates and DEIS Availability
Date: Friday, December 18, 2015 5:51:25 PM

I requested at your last meeting at Perkins Square Baptist Church a full review and report on the 2008 and 2011 Health Disparity Profiles of Sandtown/Winchester - Harlem Park done by the Baltimore City Health Department and Johns Hopkins University and what impact this project will additionally have on us.

Our communities are already suffering far too many disparities to have yet another health and environmental bolder dropped on us. Haven't Matthew A. Henson Neighborhood Association and other adjoining communities suffered enough?

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Dr. Marvin L. 'Doc' Cheatham, Sr.
Civil Rights & Election Law Consultant
Pres. - Matthew A. Henson Neighborhood Association
CEO - Matthew Henson Community Development Corporation

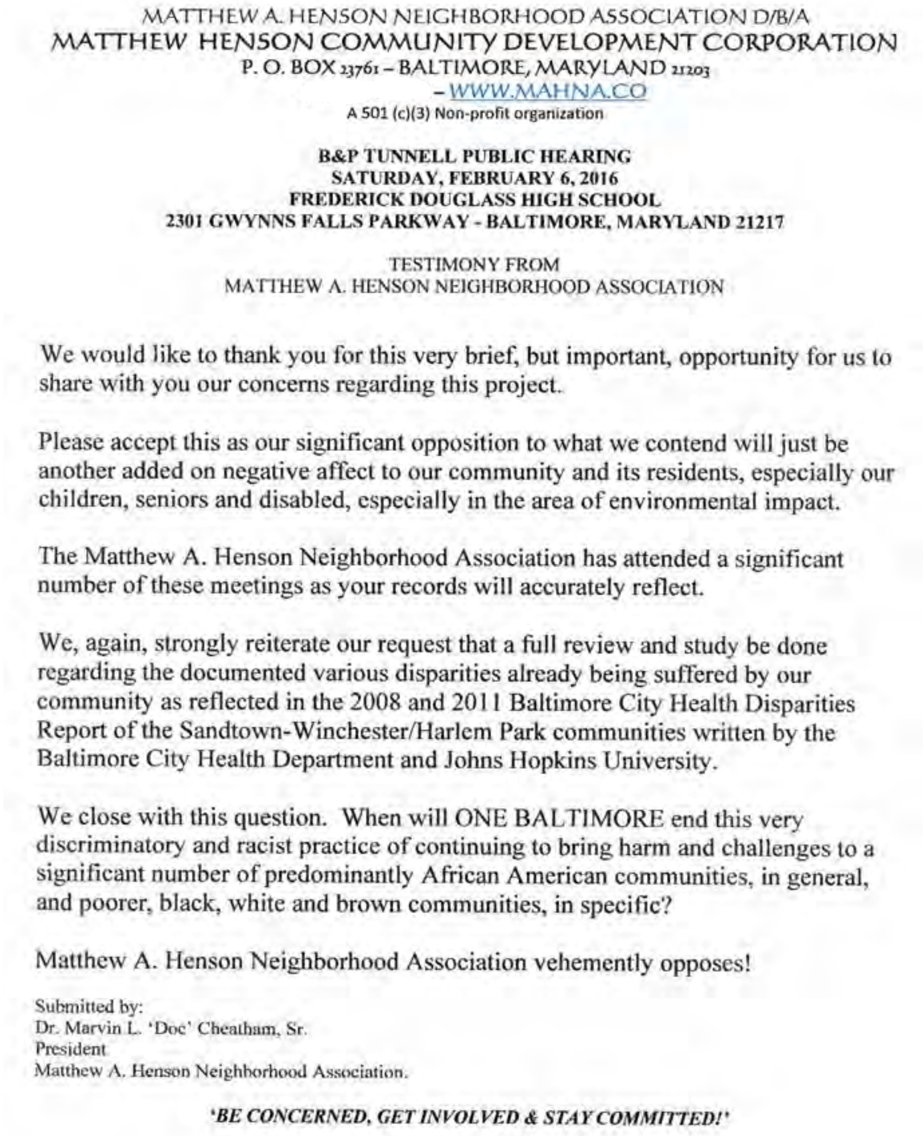
On 12/18/15, B&P Tunnel Project Team<info@bptunnel.com> wrote:

No images? Click here

RESPONSES

This comment has been repeated as part of an email chain. Please refer to response from Odessa Phillip in **DEIS Comment #17**.

COMMENTS



MATTHEW A. HENSON NEIGHBORHOOD ASSOCIATION D/B/A
MATTHEW HENSON COMMUNITY DEVELOPMENT CORPORATION
P. O. BOX 23761 – BALTIMORE, MARYLAND 21203
– WWW.MAHNA.CO
A 501 (c)(3) Non-profit organization

B&P TUNNELL PUBLIC HEARING
SATURDAY, FEBRUARY 6, 2016
FREDERICK DOUGLASS HIGH SCHOOL
2301 GWYNNS FALLS PARKWAY - BALTIMORE, MARYLAND 21217

TESTIMONY FROM
MATTHEW A. HENSON NEIGHBORHOOD ASSOCIATION

We would like to thank you for this very brief, but important, opportunity for us to share with you our concerns regarding this project.

Please accept this as our significant opposition to what we contend will just be another added on negative affect to our community and its residents, especially our children, seniors and disabled, especially in the area of environmental impact.

The Matthew A. Henson Neighborhood Association has attended a significant number of these meetings as your records will accurately reflect.

2 We, again, strongly reiterate our request that a full review and study be done regarding the documented various disparities already being suffered by our community as reflected in the 2008 and 2011 Baltimore City Health Disparities Report of the Sandtown-Winchester/Harlem Park communities written by the Baltimore City Health Department and Johns Hopkins University.

We close with this question. When will ONE BALTIMORE end this very discriminatory and racist practice of continuing to bring harm and challenges to a significant number of predominantly African American communities, in general, and poorer, black, white and brown communities, in specific?

Matthew A. Henson Neighborhood Association vehemently opposes!

Submitted by:
Dr. Marvin L. 'Doc' Cheatham, Sr.
President
Matthew A. Henson Neighborhood Association.

'BE CONCERNED, GET INVOLVED & STAY COMMITTED!'

RESPONSES

Response to Comment 2:
Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of Transportation's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

The B&P Project Team has performed an Environmental Justice (EJ) analysis consistent with EO 12898 and subsequent USDOT Orders. A critical component of the EO on environmental justice is public outreach. The Project Team has engaged extensively with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held with local officials; public, local, and regional organizations; government agencies; and representatives of affected EJ communities along the evaluated alternative alignment. Three public open houses and ten community meetings were held where the public was given the opportunity to learn about the project development, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings. Additionally, the Project Team attended meetings at the request of the following organizations: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter Claver Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School.

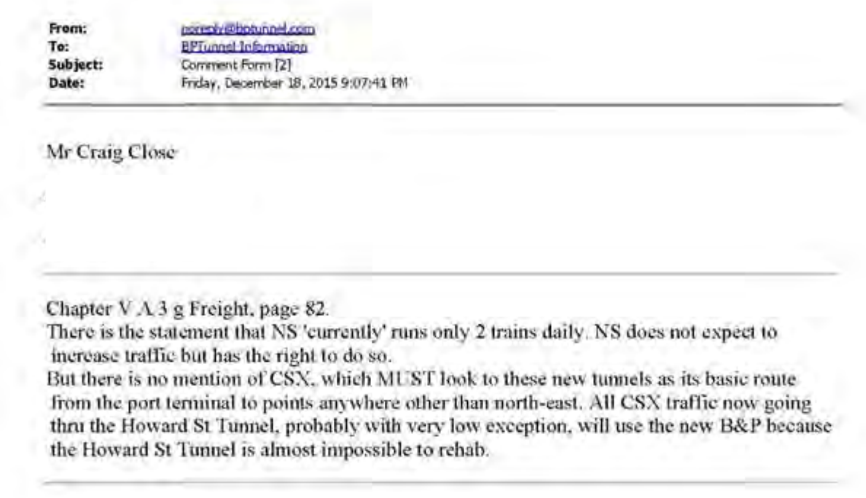
Direct mailings to residents in the Study Area included property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The Project website continues to post meeting notices, Project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship, and other organizations.

The Project Team studied community composition in the areas affected by the build alternatives. It reviewed data from the American Community Survey 2009-2013 for minority and low-income populations, the National Center for Educational Statistics, government-assisted housing programs, historical references, city officials, field visits, and community meetings. From this information, the Project Team learned that of the 77 Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS.

COMMENTS	RESPONSES
	Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations. For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings. As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be underground which would reduce the overall impact to the communities. The Project sponsor will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project sponsor will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

COMMENTS

DEIS Comment 19:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form [2]
Date: Friday, December 18, 2015 9:07:41 PM

Mr Craig Close

Chapter V A 3 g Freight, page 82.

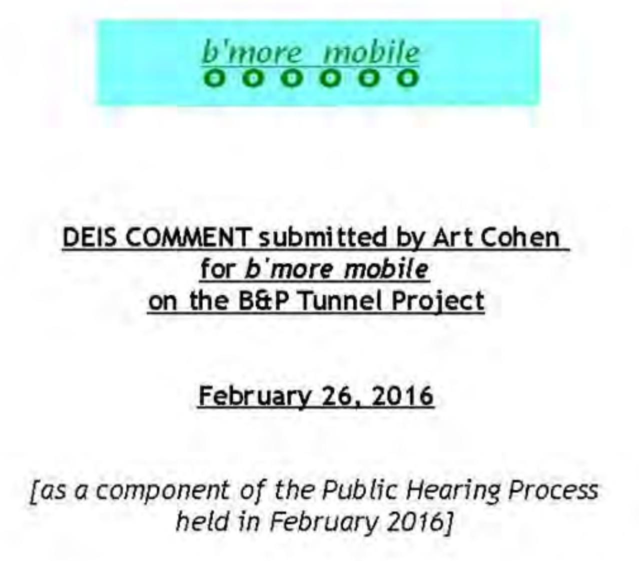
1 There is the statement that NS 'currently' runs only 2 trains daily. NS does not expect to increase traffic but has the right to do so.
But there is no mention of CSX, which MUST look to these new tunnels as its basic route from the port terminal to points anywhere other than north-east. All CSX traffic now going thru the Howard St Tunnel, probably with very low exception, will use the new B&P because the Howard St Tunnel is almost impossible to rehab.

RESPONSES

Response to Comment 1:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic is planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

COMMENTS	RESPONSES

DEIS Comment 20:



b'more mobile

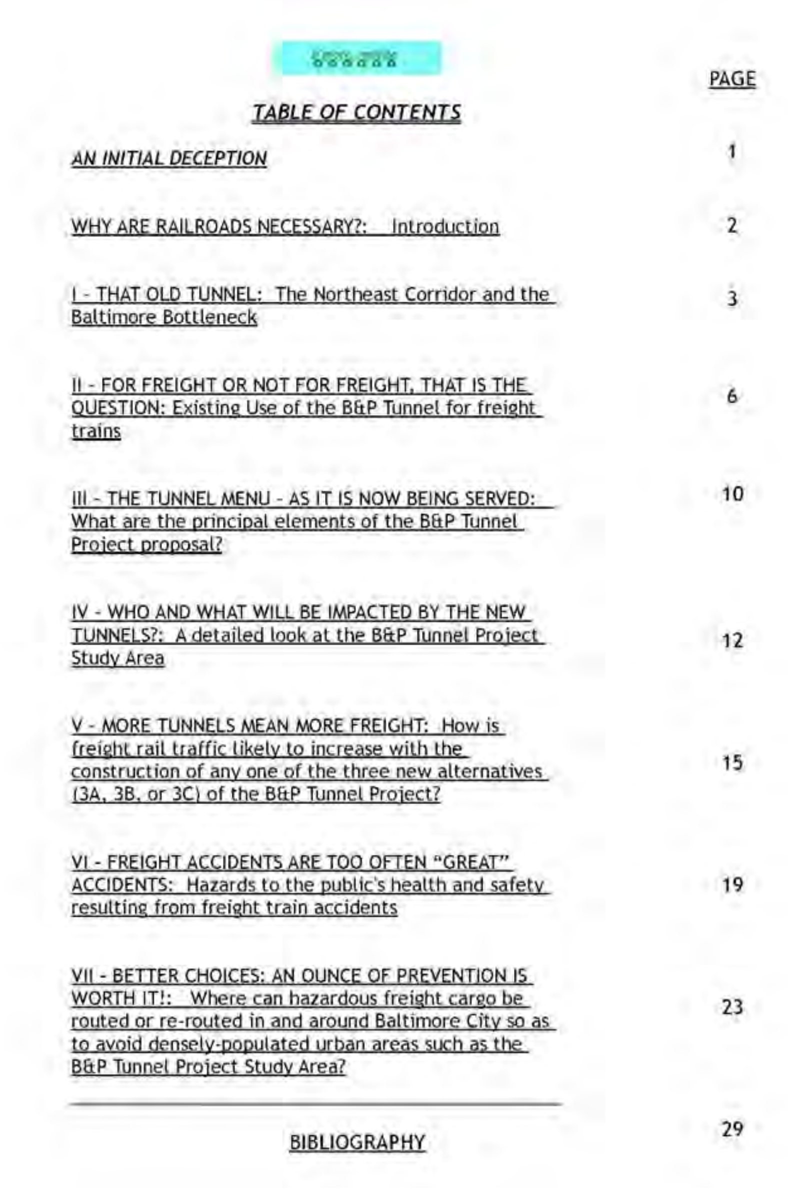
DEIS COMMENT submitted by Art Cohen
for *b'more mobile*
on the B&P Tunnel Project

February 26, 2016

[as a component of the Public Hearing Process
held in February 2016]

COMMENTS

RESPONSES



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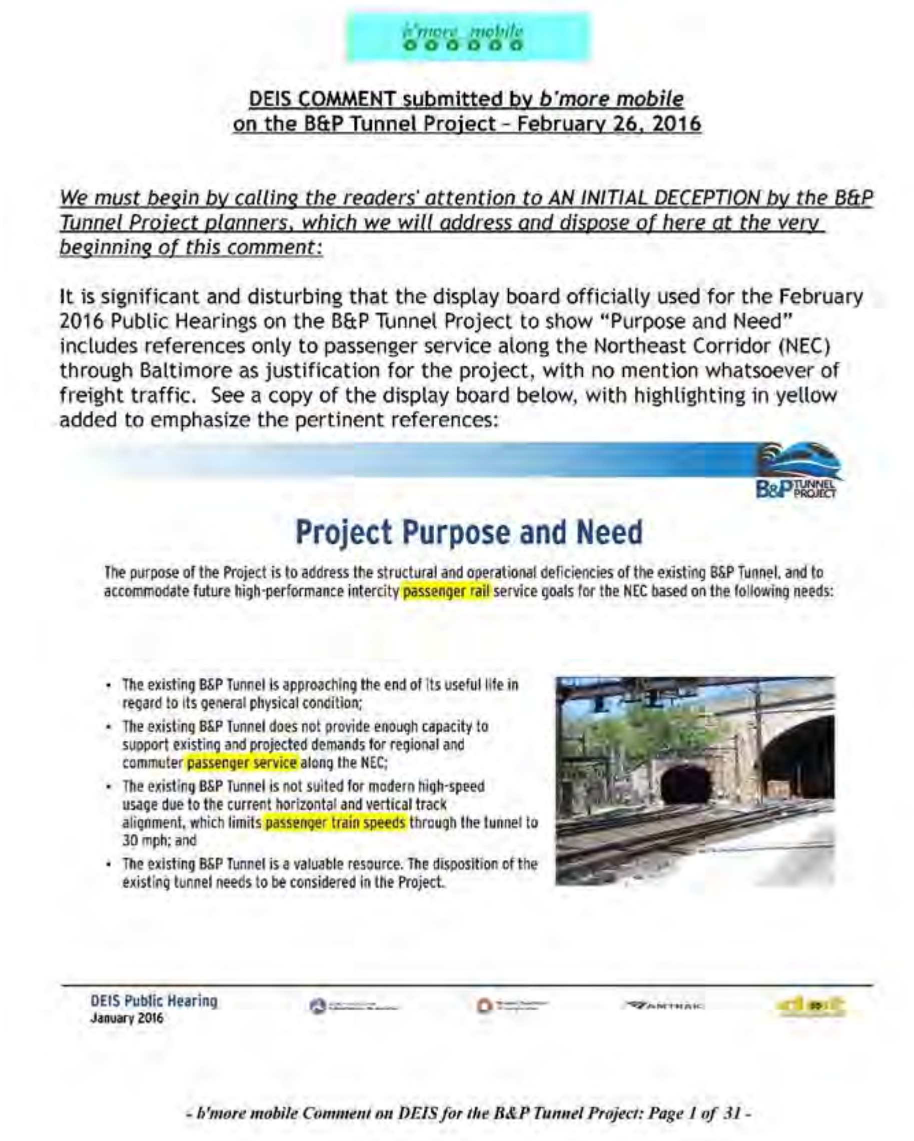


b'more mobile

DEIS COMMENT submitted by *b'more mobile* on the B&P Tunnel Project – February 26, 2016

We must begin by calling the readers' attention to AN INITIAL DECEPTION by the B&P Tunnel Project planners, which we will address and dispose of here at the very beginning of this comment:

It is significant and disturbing that the display board officially used for the February 2016 Public Hearings on the B&P Tunnel Project to show "Purpose and Need" includes references only to passenger service along the Northeast Corridor (NEC) through Baltimore as justification for the project, with no mention whatsoever of freight traffic. See a copy of the display board below, with highlighting in yellow added to emphasize the pertinent references:

Project Purpose and Need

The purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel, and to accommodate future high-performance intercity passenger rail service goals for the NEC based on the following needs:

- The existing B&P Tunnel is approaching the end of its useful life in regard to its general physical condition;
- The existing B&P Tunnel does not provide enough capacity to support existing and projected demands for regional and commuter passenger service along the NEC;
- The existing B&P Tunnel is not suited for modern high-speed usage due to the current horizontal and vertical track alignment, which limits passenger train speeds through the tunnel to 30 mph; and
- The existing B&P Tunnel is a valuable resource. The disposition of the existing tunnel needs to be considered in the Project.

DEIS Public Hearing
January 2016

- b'more mobile Comment on DEIS for the B&P Tunnel Project: Page 1 of 31 -

RESPONSES

Response to DEIS Comment 20:
This comment includes a summary of the B&P Tunnel Project purpose and need, as well as some if its principal elements and impacts. However, the comment is primarily focused on the future of freight traffic in the City of Baltimore, which includes speculation regarding how freight could make use of the B&P Tunnel and concerns associated with that use. The comment also briefly focused on Alternatives development, and summarized recent local policy and public outreach efforts associated with freight movement in Baltimore.

In regards to Project Purpose and Need, the comment is accurate. The Purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, including:

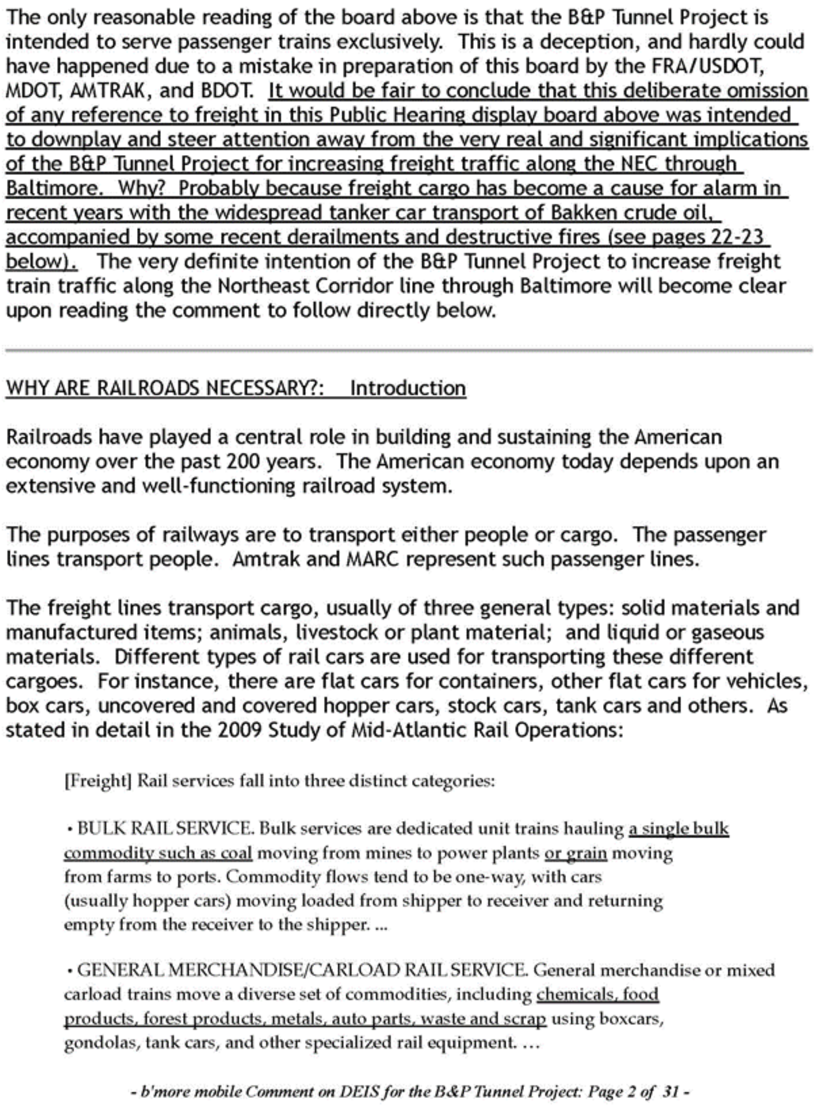
- To reduce travel time through the B&P Tunnel and along the NEC,
- To accommodate existing and projected travel demand for intercity and commuter passenger services,
- To eliminate impediments to existing and projected operations along the NEC, and
- To provide operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

In addition, the existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

Regarding section IV of this comment, who and what will be impacted by the new tunnels, potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated

COMMENTS



The only reasonable reading of the board above is that the B&P Tunnel Project is intended to serve passenger trains exclusively. This is a deception, and hardly could have happened due to a mistake in preparation of this board by the FRA/USDOT, MDOT, AMTRAK, and BDOT. It would be fair to conclude that this deliberate omission of any reference to freight in this Public Hearing display board above was intended to downplay and steer attention away from the very real and significant implications of the B&P Tunnel Project for increasing freight traffic along the NEC through Baltimore. Why? Probably because freight cargo has become a cause for alarm in recent years with the widespread tanker car transport of Bakken crude oil, accompanied by some recent derailments and destructive fires (see pages 22-23 below). The very definite intention of the B&P Tunnel Project to increase freight train traffic along the Northeast Corridor line through Baltimore will become clear upon reading the comment to follow directly below.

WHY ARE RAILROADS NECESSARY?: Introduction

Railroads have played a central role in building and sustaining the American economy over the past 200 years. The American economy today depends upon an extensive and well-functioning railroad system.

The purposes of railways are to transport either people or cargo. The passenger lines transport people. Amtrak and MARC represent such passenger lines.

The freight lines transport cargo, usually of three general types: solid materials and manufactured items; animals, livestock or plant material; and liquid or gaseous materials. Different types of rail cars are used for transporting these different cargoes. For instance, there are flat cars for containers, other flat cars for vehicles, box cars, uncovered and covered hopper cars, stock cars, tank cars and others. As stated in detail in the 2009 Study of Mid-Atlantic Rail Operations:

> [Freight] Rail services fall into three distinct categories:
>
> • BULK RAIL SERVICE. Bulk services are dedicated unit trains hauling a single bulk commodity such as coal moving from mines to power plants or grain moving from farms to ports. Commodity flows tend to be one-way, with cars (usually hopper cars) moving loaded from shipper to receiver and returning empty from the receiver to the shipper. ...
>
> • GENERAL MERCHANDISE/CARLOAD RAIL SERVICE. General merchandise or mixed carload trains move a diverse set of commodities, including chemicals, food products, forest products, metals, auto parts, waste and scrap using boxcars, gondolas, tank cars, and other specialized rail equipment. …

- b'more mobile Comment on DEIS for the B&P Tunnel Project: Page 2 of 31 -

RESPONSES

displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

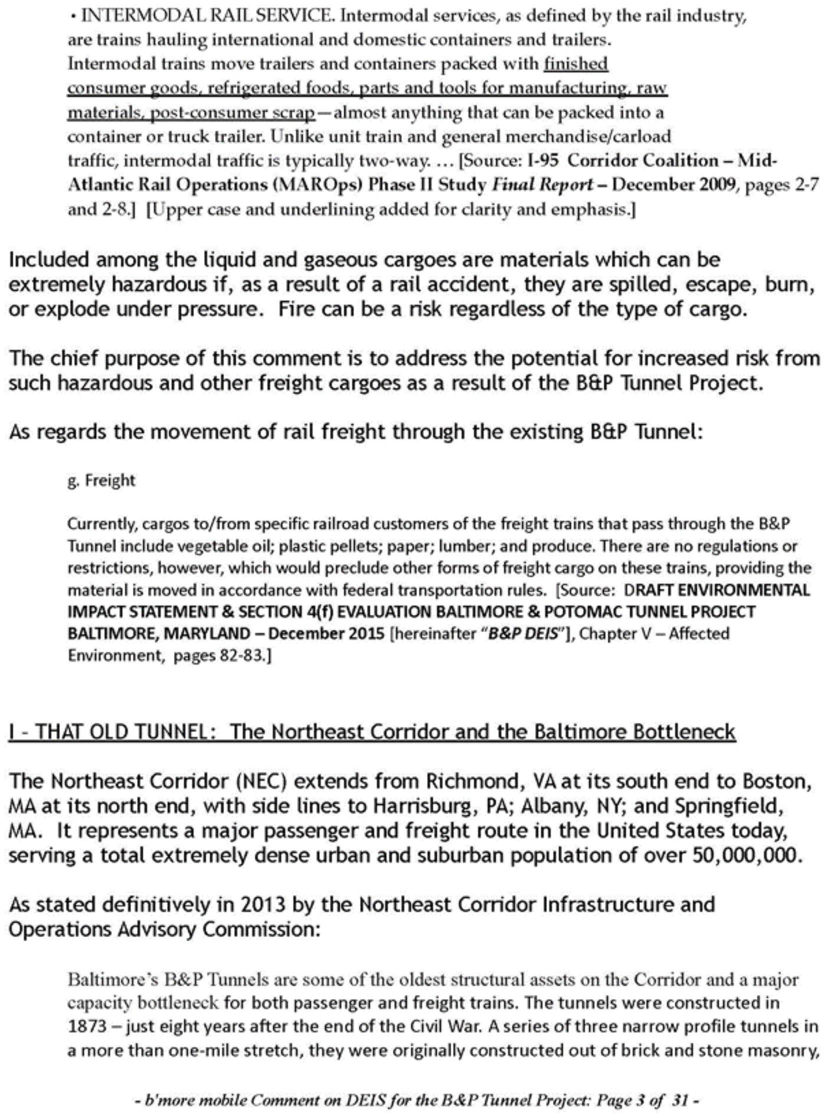
Displacement and community facility impacts have been minimized with the selection and refinement of the Preferred Alternative. Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state, and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

Regarding Alternative analysis, as described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

In **Section VII** of this comment, regarding better choices for tunnel locations, there was disagreement with the decision to use the condition of existing infrastructure (specifically Penn Station) as a basis to exclude Alternatives from further study. The constraints and requirements used in the evaluation of Alternatives were created to ensure that the Alternatives that advanced to further study would be both feasible and reasonable to implement. The continued use of assets such as Baltimore Penn Station and the Gwynns Falls Bridge ensure that additional funds are not spent rebuilding functional infrastructure

COMMENTS



> • INTERMODAL RAIL SERVICE. Intermodal services, as defined by the rail industry, are trains hauling international and domestic containers and trailers. Intermodal trains move trailers and containers packed with finished consumer goods, refrigerated foods, parts and tools for manufacturing, raw materials, post-consumer scrap—almost anything that can be packed into a container or truck trailer. Unlike unit train and general merchandise/carload traffic, intermodal traffic is typically two-way. … [Source: **I-95 Corridor Coalition – Mid-Atlantic Rail Operations (MAROps) Phase II Study *Final Report* – December 2009**, pages 2-7 and 2-8.] [Upper case and underlining added for clarity and emphasis.]

Included among the liquid and gaseous cargoes are materials which can be extremely hazardous if, as a result of a rail accident, they are spilled, escape, burn, or explode under pressure. Fire can be a risk regardless of the type of cargo.

The chief purpose of this comment is to address the potential for increased risk from such hazardous and other freight cargoes as a result of the B&P Tunnel Project.

As regards the movement of rail freight through the existing B&P Tunnel:

> g. Freight
>
> Currently, cargos to/from specific railroad customers of the freight trains that pass through the B&P Tunnel include vegetable oil; plastic pellets; paper; lumber; and produce. There are no regulations or restrictions, however, which would preclude other forms of freight cargo on these trains, providing the material is moved in accordance with federal transportation rules. [Source: **DRAFT ENVIRONMENTAL IMPACT STATEMENT & SECTION 4(f) EVALUATION BALTIMORE & POTOMAC TUNNEL PROJECT BALTIMORE, MARYLAND – December 2015** [hereinafter "***B&P DEIS***"], Chapter V – Affected Environment, pages 82-83.]

I - THAT OLD TUNNEL: The Northeast Corridor and the Baltimore Bottleneck

The Northeast Corridor (NEC) extends from Richmond, VA at its south end to Boston, MA at its north end, with side lines to Harrisburg, PA; Albany, NY; and Springfield, MA. It represents a major passenger and freight route in the United States today, serving a total extremely dense urban and suburban population of over 50,000,000.

As stated definitively in 2013 by the Northeast Corridor Infrastructure and Operations Advisory Commission:

> Baltimore's B&P Tunnels are some of the oldest structural assets on the Corridor and a major capacity bottleneck for both passenger and freight trains. The tunnels were constructed in 1873 – just eight years after the end of the Civil War. A series of three narrow profile tunnels in a more than one-mile stretch, they were originally constructed out of brick and stone masonry,

- b'more mobile Comment on DEIS for the B&P Tunnel Project: Page 3 of 31 -

RESPONSES

and that communities and the local economy are not disrupted with unnecessary construction.

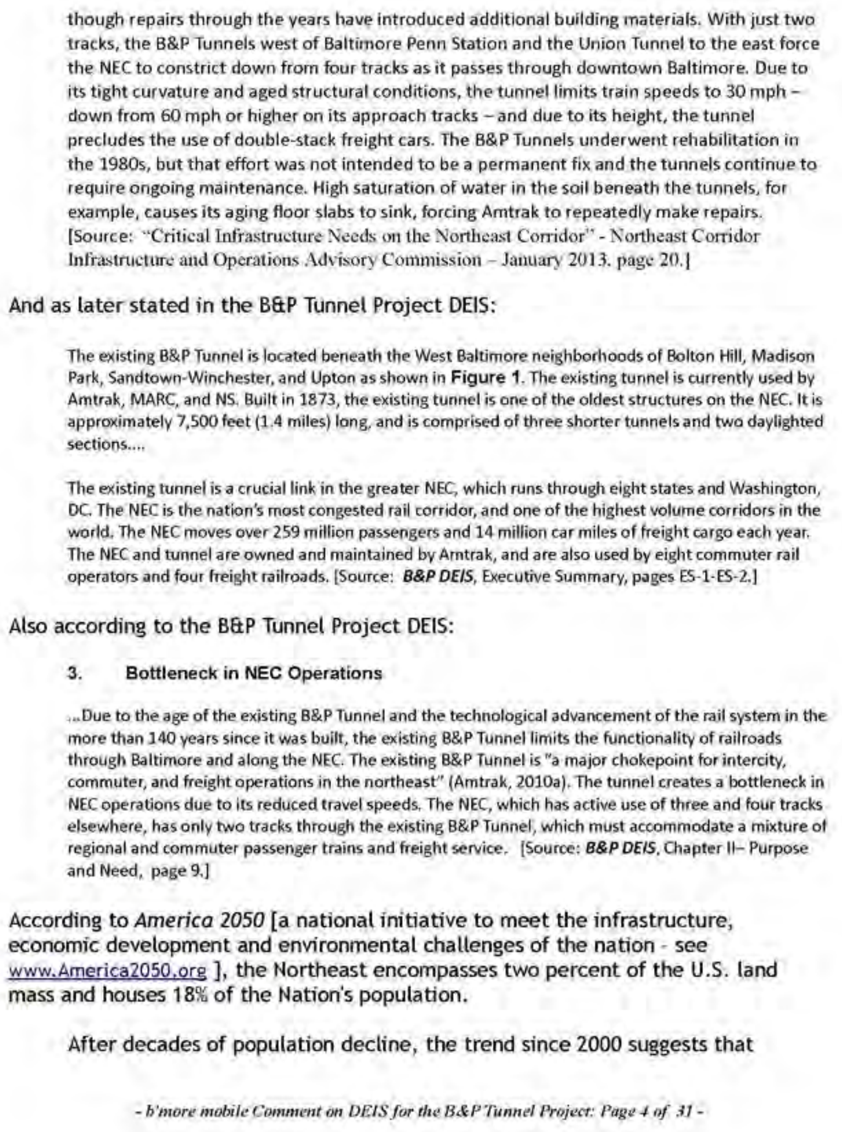
Regarding freight, the build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

As correctly stated in **Section II** of this comment, Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two freight trains through the existing B&P Tunnel daily.

The statutory and contractual obligations referred to above include a Common Carrier Obligation, which prohibits the railroads using the B&P Tunnel from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

COMMENTS



> though repairs through the years have introduced additional building materials. With just two tracks, the B&P Tunnels west of Baltimore Penn Station and the Union Tunnel to the east force the NEC to constrict down from four tracks as it passes through downtown Baltimore. Due to its tight curvature and aged structural conditions, the tunnel limits train speeds to 30 mph – down from 60 mph or higher on its approach tracks – and due to its height, the tunnel precludes the use of double-stack freight cars. The B&P Tunnels underwent rehabilitation in the 1980s, but that effort was not intended to be a permanent fix and the tunnels continue to require ongoing maintenance. High saturation of water in the soil beneath the tunnels, for example, causes its aging floor slabs to sink, forcing Amtrak to repeatedly make repairs. [Source: "Critical Infrastructure Needs on the Northeast Corridor" - Northeast Corridor Infrastructure and Operations Advisory Commission – January 2013. page 20.]

And as later stated in the B&P Tunnel Project DEIS:

> The existing B&P Tunnel is located beneath the West Baltimore neighborhoods of Bolton Hill, Madison Park, Sandtown-Winchester, and Upton as shown in **Figure 1**. The existing tunnel is currently used by Amtrak, MARC, and NS. Built in 1873, the existing tunnel is one of the oldest structures on the NEC. It is approximately 7,500 feet (1.4 miles) long, and is comprised of three shorter tunnels and two daylighted sections....
>
> The existing tunnel is a crucial link in the greater NEC, which runs through eight states and Washington, DC. The NEC is the nation's most congested rail corridor, and one of the highest volume corridors in the world. The NEC moves over 259 million passengers and 14 million car miles of freight cargo each year. The NEC and tunnel are owned and maintained by Amtrak, and are also used by eight commuter rail operators and four freight railroads. [Source: ***B&P DEIS***, Executive Summary, pages ES-1-ES-2.]

Also according to the B&P Tunnel Project DEIS:

> **3. Bottleneck in NEC Operations**
>
> ...Due to the age of the existing B&P Tunnel and the technological advancement of the rail system in the more than 140 years since it was built, the existing B&P Tunnel limits the functionality of railroads through Baltimore and along the NEC. The existing B&P Tunnel is "a major chokepoint for intercity, commuter, and freight operations in the northeast" (Amtrak, 2010a). The tunnel creates a bottleneck in NEC operations due to its reduced travel speeds. The NEC, which has active use of three and four tracks elsewhere, has only two tracks through the existing B&P Tunnel, which must accommodate a mixture of regional and commuter passenger trains and freight service. [Source: ***B&P DEIS***, Chapter II– Purpose and Need, page 9.]

According to *America 2050* [a national initiative to meet the infrastructure, economic development and environmental challenges of the nation - see www.America2050.org], the Northeast encompasses two percent of the U.S. land mass and houses 18% of the Nation's population.

After decades of population decline, the trend since 2000 suggests that

- b'more mobile Comment on DEIS for the B&P Tunnel Project: Page 4 of 31 -

RESPONSES

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak does not anticipate increases in freight traffic in the foreseeable future.

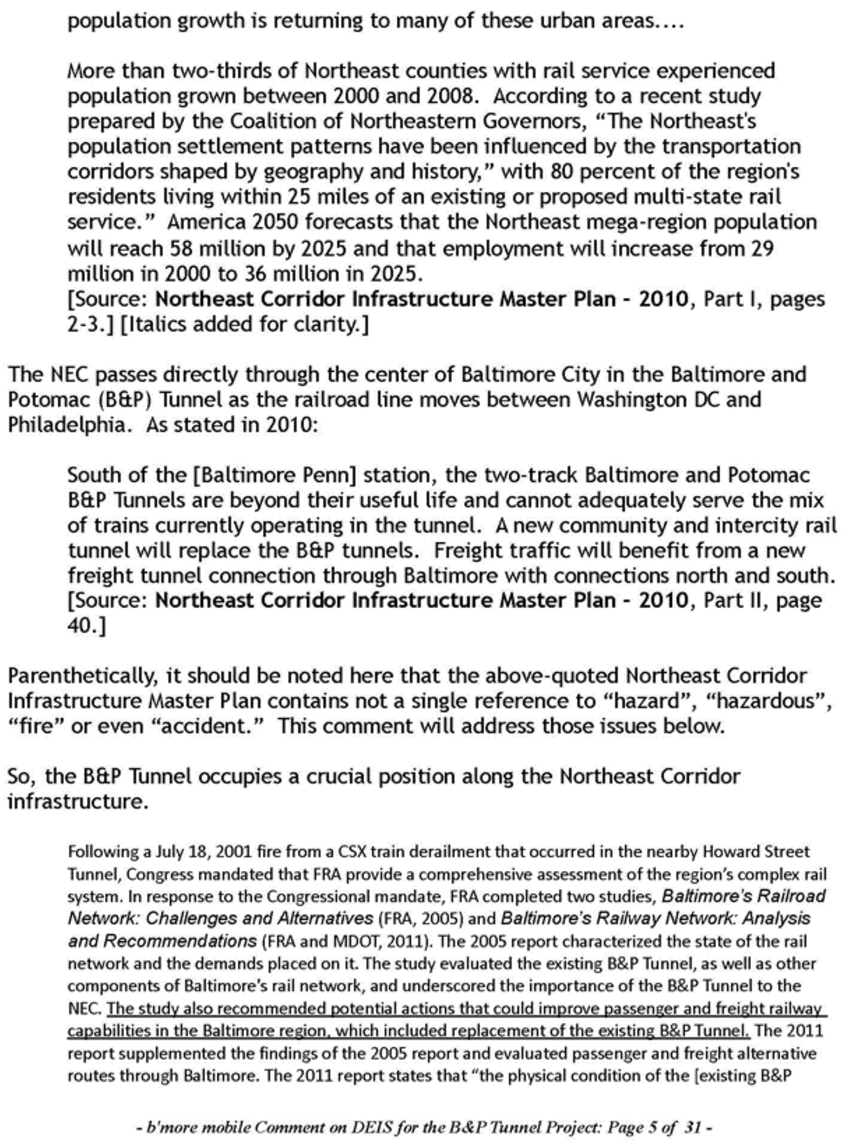
Section VII of this comment addresses local policy and advocates for legal changes. This is beyond the purview of the B&P Tunnel Project.

This comment also references the MTA Citizen Advisory Committee's report *A Proposal to Unravel Baltimore's Tangled Rail Lines.* The report argues for a comprehensive system approach to rail planning in Baltimore and the mid-Atlantic region. It describes a list of projects and the order in which they should be completed. The report takes into consideration local, state, and regional transportation routes, and recommends new construction at a number of locations in order to relieve congestion and create opportunities for expanding rail service in the future.

While recommendations in the report focus on resolving issues at a regional level, they would not address or resolve the specific needs of the B&P Tunnel. As stated above, the existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life. It is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. For additional information regarding The Purpose and Need for the Project, please see **Chapter II** of this FEIS. To review the September 2015 report in its entirety, please refer to **DEIS Comment #11**.

COMMENTS

RESPONSES



> population growth is returning to many of these urban areas....
>
> More than two-thirds of Northeast counties with rail service experienced population grown between 2000 and 2008. According to a recent study prepared by the Coalition of Northeastern Governors, "The Northeast's population settlement patterns have been influenced by the transportation corridors shaped by geography and history," with 80 percent of the region's residents living within 25 miles of an existing or proposed multi-state rail service." America 2050 forecasts that the Northeast mega-region population will reach 58 million by 2025 and that employment will increase from 29 million in 2000 to 36 million in 2025.
> [Source: **Northeast Corridor Infrastructure Master Plan - 2010**, Part I, pages 2-3.] [Italics added for clarity.]

The NEC passes directly through the center of Baltimore City in the Baltimore and Potomac (B&P) Tunnel as the railroad line moves between Washington DC and Philadelphia. As stated in 2010:

> South of the [Baltimore Penn] station, the two-track Baltimore and Potomac B&P Tunnels are beyond their useful life and cannot adequately serve the mix of trains currently operating in the tunnel. A new community and intercity rail tunnel will replace the B&P tunnels. Freight traffic will benefit from a new freight tunnel connection through Baltimore with connections north and south.
> [Source: **Northeast Corridor Infrastructure Master Plan - 2010**, Part II, page 40.]

Parenthetically, it should be noted here that the above-quoted Northeast Corridor Infrastructure Master Plan contains not a single reference to "hazard", "hazardous", "fire" or even "accident." This comment will address those issues below.

So, the B&P Tunnel occupies a crucial position along the Northeast Corridor infrastructure.

> Following a July 18, 2001 fire from a CSX train derailment that occurred in the nearby Howard Street Tunnel, Congress mandated that FRA provide a comprehensive assessment of the region's complex rail system. In response to the Congressional mandate, FRA completed two studies, *Baltimore's Railroad Network: Challenges and Alternatives* (FRA, 2005) and *Baltimore's Railway Network: Analysis and Recommendations* (FRA and MDOT, 2011). The 2005 report characterized the state of the rail network and the demands placed on it. The study evaluated the existing B&P Tunnel, as well as other components of Baltimore's rail network, and underscored the importance of the B&P Tunnel to the NEC. The study also recommended potential actions that could improve passenger and freight railway capabilities in the Baltimore region, which included replacement of the existing B&P Tunnel. The 2011 report supplemented the findings of the 2005 report and evaluated passenger and freight alternative routes through Baltimore. The 2011 report states that "the physical condition of the [existing B&P

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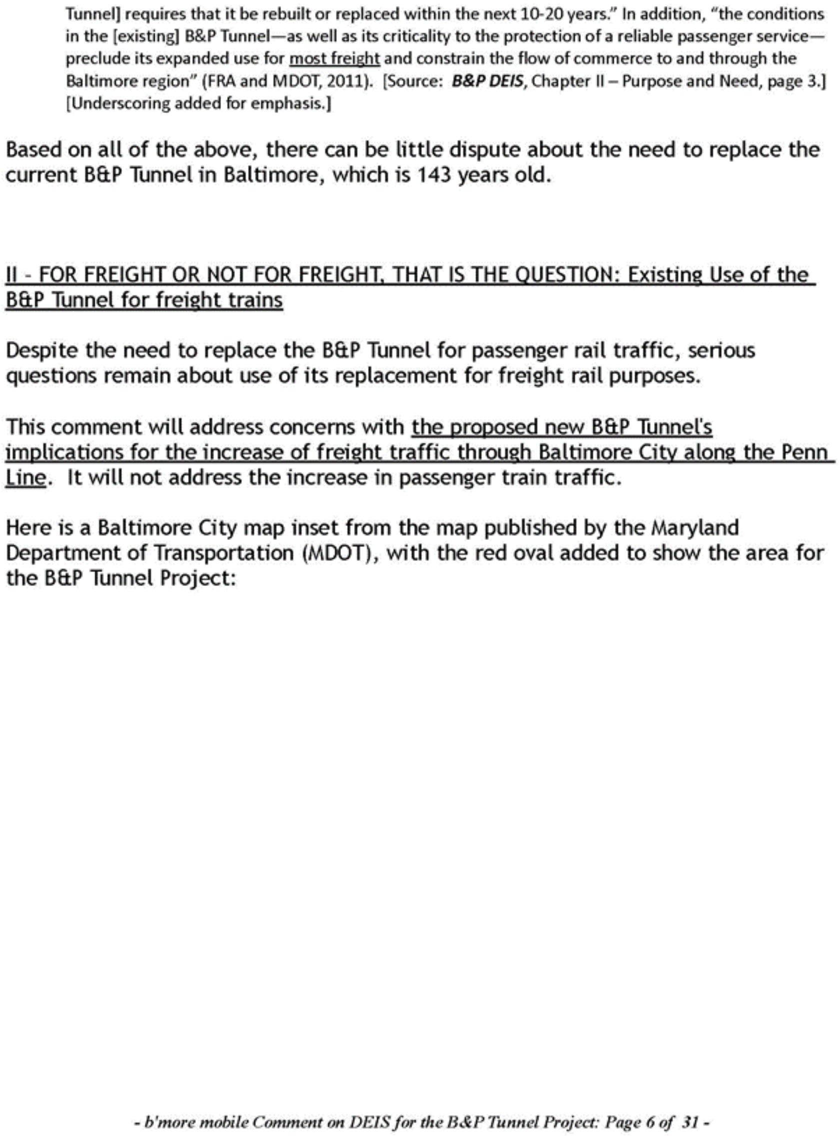

> Tunnel] requires that it be rebuilt or replaced within the next 10-20 years." In addition, "the conditions in the [existing] B&P Tunnel—as well as its criticality to the protection of a reliable passenger service—preclude its expanded use for most freight and constrain the flow of commerce to and through the Baltimore region" (FRA and MDOT, 2011). [Source: ***B&P DEIS***, Chapter II – Purpose and Need, page 3.] [Underscoring added for emphasis.]

Based on all of the above, there can be little dispute about the need to replace the current B&P Tunnel in Baltimore, which is 143 years old.

II - FOR FREIGHT OR NOT FOR FREIGHT, THAT IS THE QUESTION: Existing Use of the B&P Tunnel for freight trains

Despite the need to replace the B&P Tunnel for passenger rail traffic, serious questions remain about use of its replacement for freight rail purposes.

This comment will address concerns with the proposed new B&P Tunnel's implications for the increase of freight traffic through Baltimore City along the Penn Line. It will not address the increase in passenger train traffic.

Here is a Baltimore City map inset from the map published by the Maryland Department of Transportation (MDOT), with the red oval added to show the area for the B&P Tunnel Project:

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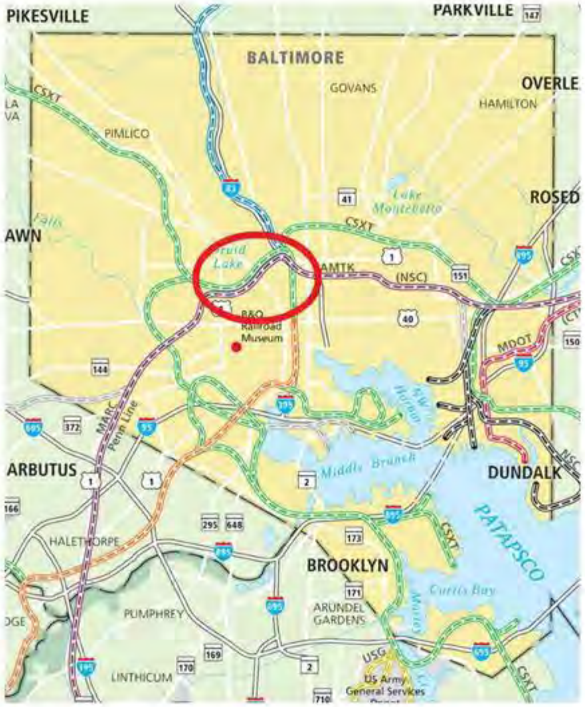

[Source: "Freight Rail Map" of the Maryland Department of Transportation (MDOT) - accessed February 16, 2016 from the internet: http://www.mdot.maryland.gov/Office%20of%20Freight%20and%20Multimodalism/railmap.pdf]

It is very clear, looking at the above map, that the Baltimore City area is laced by a number of rail lines, all of which are used for freight (three of these lines are also used for passengers - AMTRAK and the two MARC lines). The two major freight lines in Baltimore City are nationally prominent - they are the Norfolk Southern Railway line (NSC on the map - the purple lines) and the CSX Transportation line (CSXT on the map - the green lines). Norfolk Southern has its own track, and also currently shares the track with AMTRAK through the study area of the B&P Tunnel. CSXT also can share the same track, but does not use it as frequently as NSC.

COMMENTS

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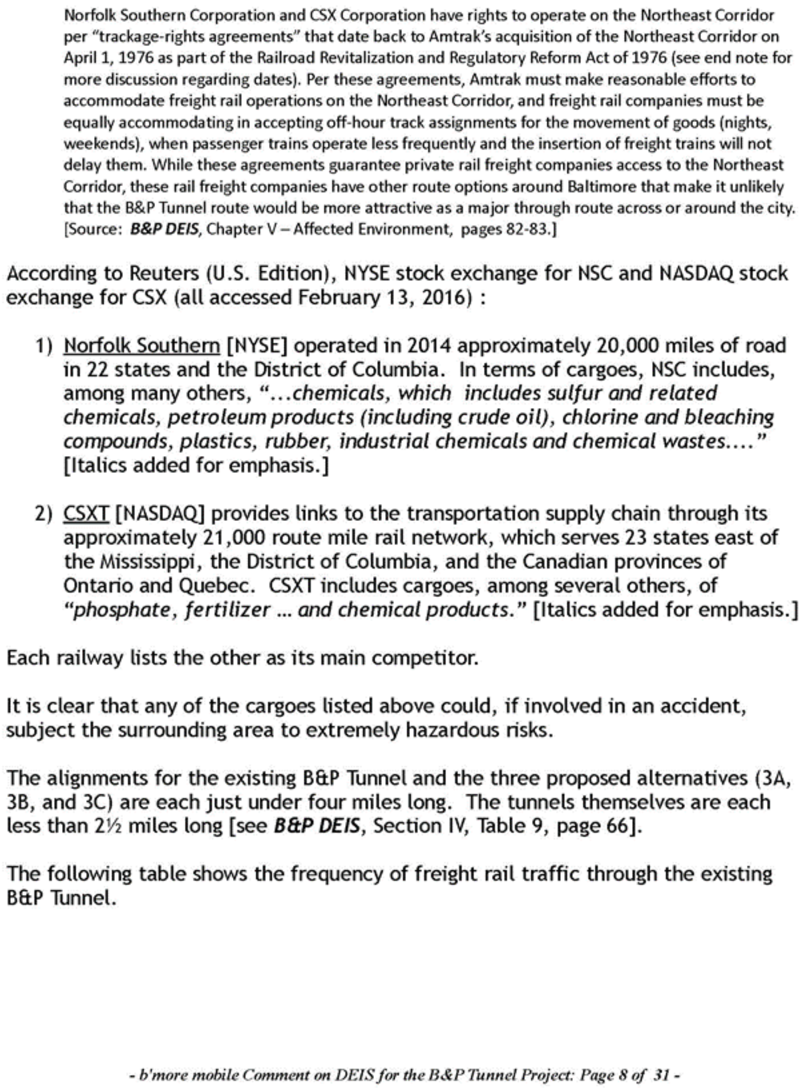

> Norfolk Southern Corporation and CSX Corporation have rights to operate on the Northeast Corridor per “trackage-rights agreements” that date back to Amtrak’s acquisition of the Northeast Corridor on April 1, 1976 as part of the Railroad Revitalization and Regulatory Reform Act of 1976 (see end note for more discussion regarding dates). Per these agreements, Amtrak must make reasonable efforts to accommodate freight rail operations on the Northeast Corridor, and freight rail companies must be equally accommodating in accepting off-hour track assignments for the movement of goods (nights, weekends), when passenger trains operate less frequently and the insertion of freight trains will not delay them. While these agreements guarantee private rail freight companies access to the Northeast Corridor, these rail freight companies have other route options around Baltimore that make it unlikely that the B&P Tunnel route would be more attractive as a major through route across or around the city. [Source: ***B&P DEIS***, Chapter V – Affected Environment, pages 82-83.]

According to Reuters (U.S. Edition), NYSE stock exchange for NSC and NASDAQ stock exchange for CSX (all accessed February 13, 2016) :

1) Norfolk Southern [NYSE] operated in 2014 approximately 20,000 miles of road in 22 states and the District of Columbia. In terms of cargoes, NSC includes, among many others, “*...chemicals, which includes sulfur and related chemicals, petroleum products (including crude oil), chlorine and bleaching compounds, plastics, rubber, industrial chemicals and chemical wastes....*” [Italics added for emphasis.]

2) CSXT [NASDAQ] provides links to the transportation supply chain through its approximately 21,000 route mile rail network, which serves 23 states east of the Mississippi, the District of Columbia, and the Canadian provinces of Ontario and Quebec. CSXT includes cargoes, among several others, of “*phosphate, fertilizer … and chemical products.*” [Italics added for emphasis.]

Each railway lists the other as its main competitor.

It is clear that any of the cargoes listed above could, if involved in an accident, subject the surrounding area to extremely hazardous risks.

The alignments for the existing B&P Tunnel and the three proposed alternatives (3A, 3B, and 3C) are each just under four miles long. The tunnels themselves are each less than 2½ miles long [see ***B&P DEIS***, Section IV, Table 9, page 66].

The following table shows the frequency of freight rail traffic through the existing B&P Tunnel.

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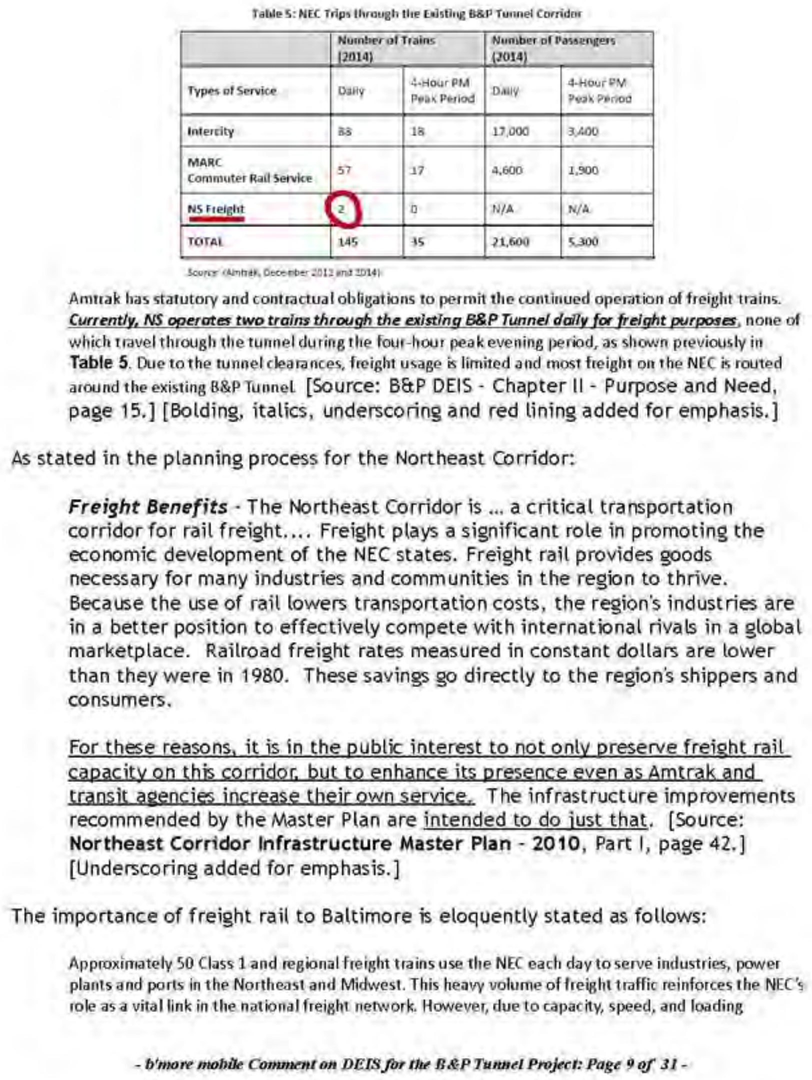

Table 5: NEC Trips through the Existing B&P Tunnel Corridor

	Number of Trains (2014)		Number of Passengers (2014)	
Types of Service	Daily	4-Hour PM Peak Period	Daily	4-Hour PM Peak Period
Intercity	88	18	17,000	3,400
MARC Commuter Rail Service	57	17	4,600	1,900
NS Freight	2	0	N/A	N/A
TOTAL	145	35	21,600	5,300

Source: (Amtrak, December 2013 and 2014)

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. ***Currently, NS operates two trains through the existing B&P Tunnel daily for freight purposes***, none of which travel through the tunnel during the four-hour peak evening period, as shown previously in **Table 5**. Due to the tunnel clearances, freight usage is limited and most freight on the NEC is routed around the existing B&P Tunnel. [Source: B&P DEIS - Chapter II - Purpose and Need, page 15.] [Bolding, italics, underscoring and red lining added for emphasis.]

As stated in the planning process for the Northeast Corridor:

> ***Freight Benefits*** - The Northeast Corridor is ... a critical transportation corridor for rail freight.... Freight plays a significant role in promoting the economic development of the NEC states. Freight rail provides goods necessary for many industries and communities in the region to thrive. Because the use of rail lowers transportation costs, the region's industries are in a better position to effectively compete with international rivals in a global marketplace. Railroad freight rates measured in constant dollars are lower than they were in 1980. These savings go directly to the region's shippers and consumers.
>
> For these reasons, it is in the public interest to not only preserve freight rail capacity on this corridor, but to enhance its presence even as Amtrak and transit agencies increase their own service. The infrastructure improvements recommended by the Master Plan are intended to do just that. [Source: **Northeast Corridor Infrastructure Master Plan - 2010**, Part I, page 42.] [Underscoring added for emphasis.]

The importance of freight rail to Baltimore is eloquently stated as follows:

> Approximately 50 Class 1 and regional freight trains use the NEC each day to serve industries, power plants and ports in the Northeast and Midwest. This heavy volume of freight traffic reinforces the NEC's role as a vital link in the national freight network. However, due to capacity, speed, and loading

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COMMENTS

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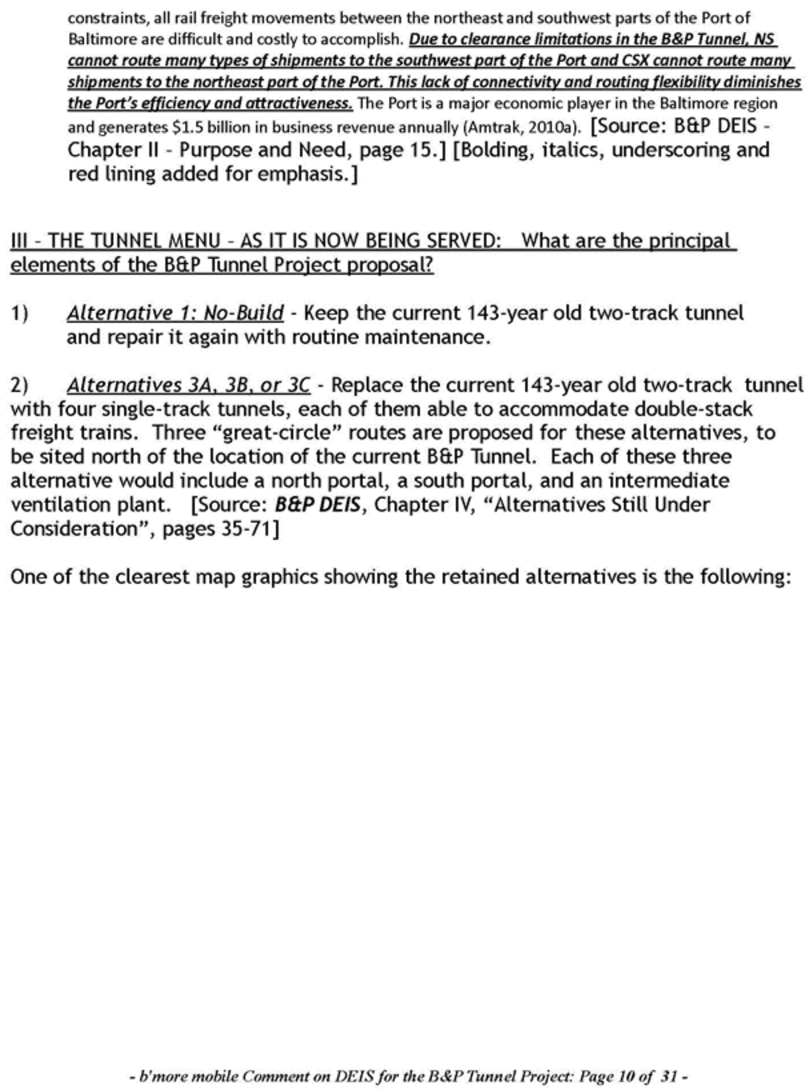

constraints, all rail freight movements between the northeast and southwest parts of the Port of Baltimore are difficult and costly to accomplish. ***Due to clearance limitations in the B&P Tunnel, NS cannot route many types of shipments to the southwest part of the Port and CSX cannot route many shipments to the northeast part of the Port. This lack of connectivity and routing flexibility diminishes the Port's efficiency and attractiveness.*** The Port is a major economic player in the Baltimore region and generates $1.5 billion in business revenue annually (Amtrak, 2010a). [Source: B&P DEIS - Chapter II - Purpose and Need, page 15.] [Bolding, italics, underscoring and red lining added for emphasis.]

III - THE TUNNEL MENU - AS IT IS NOW BEING SERVED: What are the principal elements of the B&P Tunnel Project proposal?

1) *Alternative 1: No-Build* - Keep the current 143-year old two-track tunnel and repair it again with routine maintenance.

2) *Alternatives 3A, 3B, or 3C* - Replace the current 143-year old two-track tunnel with four single-track tunnels, each of them able to accommodate double-stack freight trains. Three "great-circle" routes are proposed for these alternatives, to be sited north of the location of the current B&P Tunnel. Each of these three alternative would include a north portal, a south portal, and an intermediate ventilation plant. [Source: ***B&P DEIS***, Chapter IV, "Alternatives Still Under Consideration", pages 35-71]

One of the clearest map graphics showing the retained alternatives is the following:

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COMMENTS

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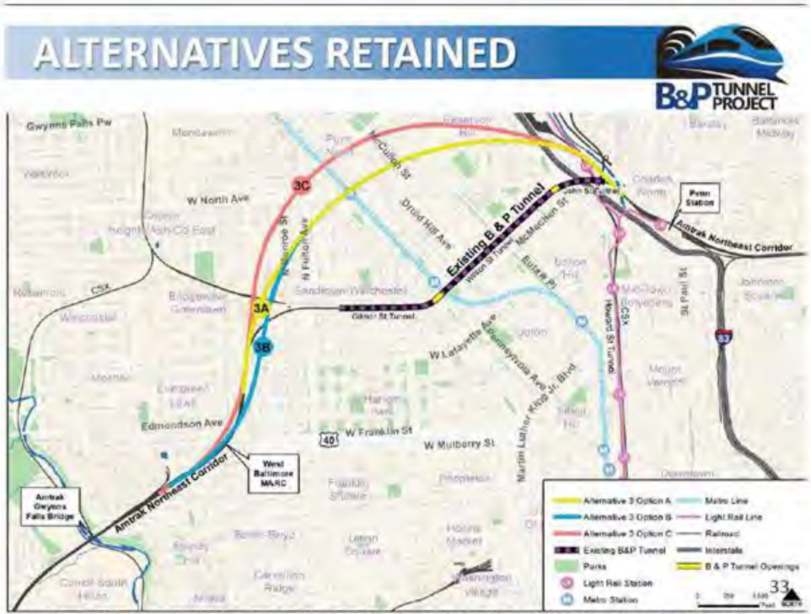

ALTERNATIVES RETAINED

[Source: Baltimore & Potomac Tunnel Project, October 2015 Community Meetings [PowerPoint] Presentation - Targeted Meetings 10-08-2015, page 33. - also the graphic on a meeting display board used for the February 2016 public hearings: **"Alternatives Evaluated in DEIS"**]

One can see how these three alternatives to the current no-build "Existing B&P Tunnel" above were in the mind of officials reviewing the problems of moving freight in and around Baltimore City as early as the first part of the last decade.

In the wake of the Howard Street Tunnel derailment and fire, the US Congress ordered "a comprehensive assessment of the region's complex rail system" (see the first reference to that here above at page 6). The resulting reports were as follows:

1) In **Report to Congress: Baltimore's Railroad Network: Challenges and Alternatives** - U. S. Department of Transportation, Federal Railroad Administration - November 2005 at pages 7-8 to 7-9, where there is the first reference to a "Great Circle Passenger Tunnel (GCPT)," and then at pages 8-1 to 8-2 where there is a first reference to "a Great Circle Freight Tunnel (GCFT), similar in concept to the Great

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COMMENTS

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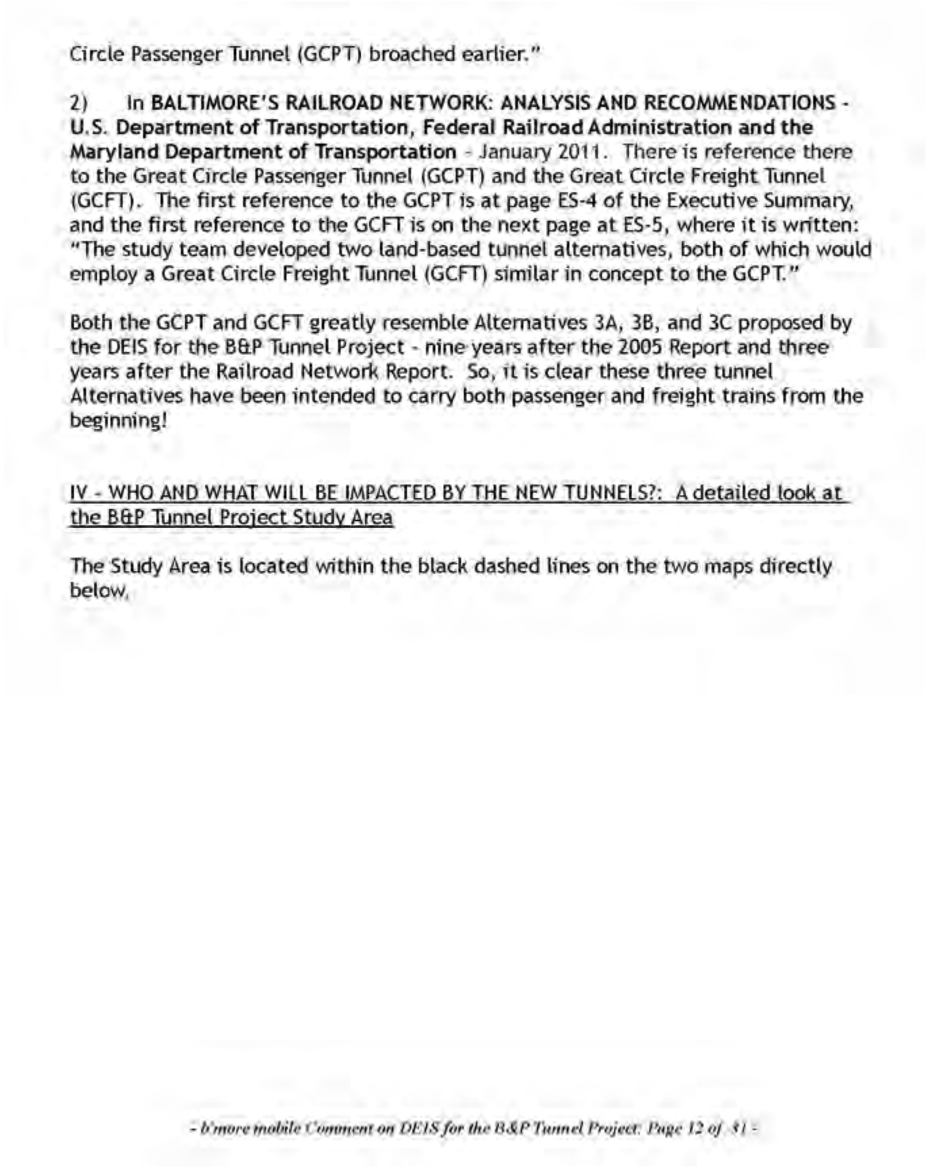

Circle Passenger Tunnel (GCPT) broached earlier."

2) In **BALTIMORE'S RAILROAD NETWORK: ANALYSIS AND RECOMMENDATIONS - U.S. Department of Transportation, Federal Railroad Administration and the Maryland Department of Transportation** - January 2011. There is reference there to the Great Circle Passenger Tunnel (GCPT) and the Great Circle Freight Tunnel (GCFT). The first reference to the GCPT is at page ES-4 of the Executive Summary, and the first reference to the GCFT is on the next page at ES-5, where it is written: "The study team developed two land-based tunnel alternatives, both of which would employ a Great Circle Freight Tunnel (GCFT) similar in concept to the GCPT."

Both the GCPT and GCFT greatly resemble Alternatives 3A, 3B, and 3C proposed by the DEIS for the B&P Tunnel Project - nine years after the 2005 Report and three years after the Railroad Network Report. So, it is clear these three tunnel Alternatives have been intended to carry both passenger and freight trains from the beginning!

IV - WHO AND WHAT WILL BE IMPACTED BY THE NEW TUNNELS?: A detailed look at the B&P Tunnel Project Study Area

The Study Area is located within the black dashed lines on the two maps directly below.

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COMMENTS

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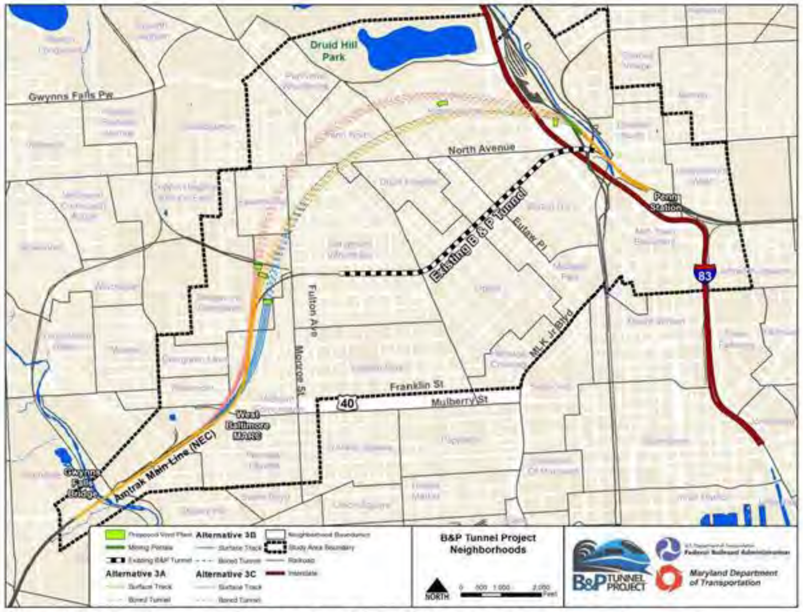


The Study Area is home to 65,762 people [see ***B&P DEIS***, Chapter V, Table 10, page 75].

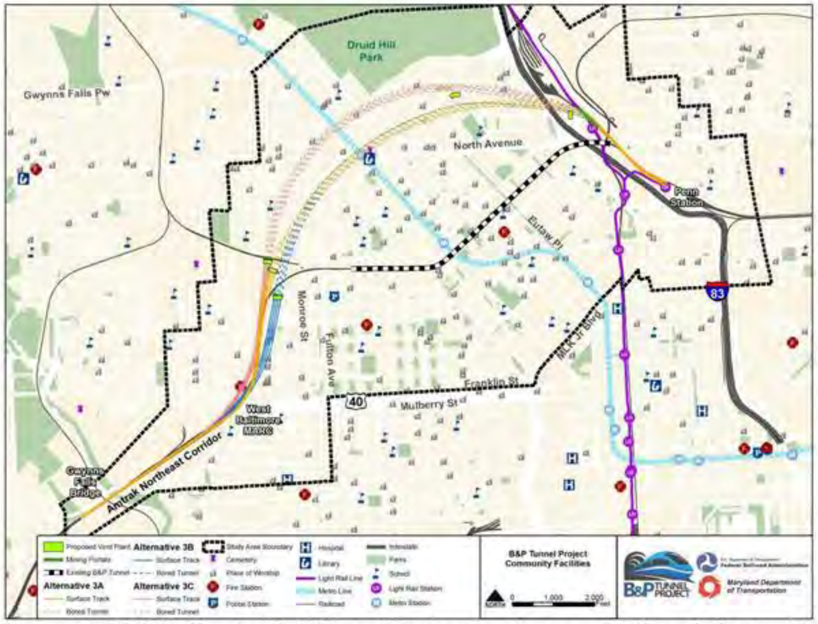
Other human institutions which are located within the study area include:

Neighborhoods - 30
Schools - 11 Elementary, 4 Elementary-Middle, 1 Middle, 1 Middle-High, 3 High, 2 Public Charter schools, 2 Academy schools.
Educational and Cultural Institutions - University of Baltimore, MICA, Lyric Opera House, Meyerhoff Symphony Hall, Station North Arts & Entertainment District.
Religious Institutions - 37, of all faiths
Business Establishments - 4,185
Fire and Rescue Facilities - 3
Public Recreation Centers - 6
Public Pools - 3
City Park and Reservoir - 1
Major Passenger Railroad Station - 1

COMMENTS

RESPONSES

The following map shows many of these institutions along with some other ones:



[Source: ***B&P DEIS***, Chapter V, "Affected Environment", pages 85-95; and Chapter VI, "Environmental Consequences", pages 162 +163]

The Study Area is located directly contiguous to a major shopping center (Mondawmin Mall) and also to Coppin State University.

It should be abundantly clear that the Study Area includes many people and human institutions which could be seriously impacted by a hazardous rail accident within any of the three tunnel alternatives proposed.

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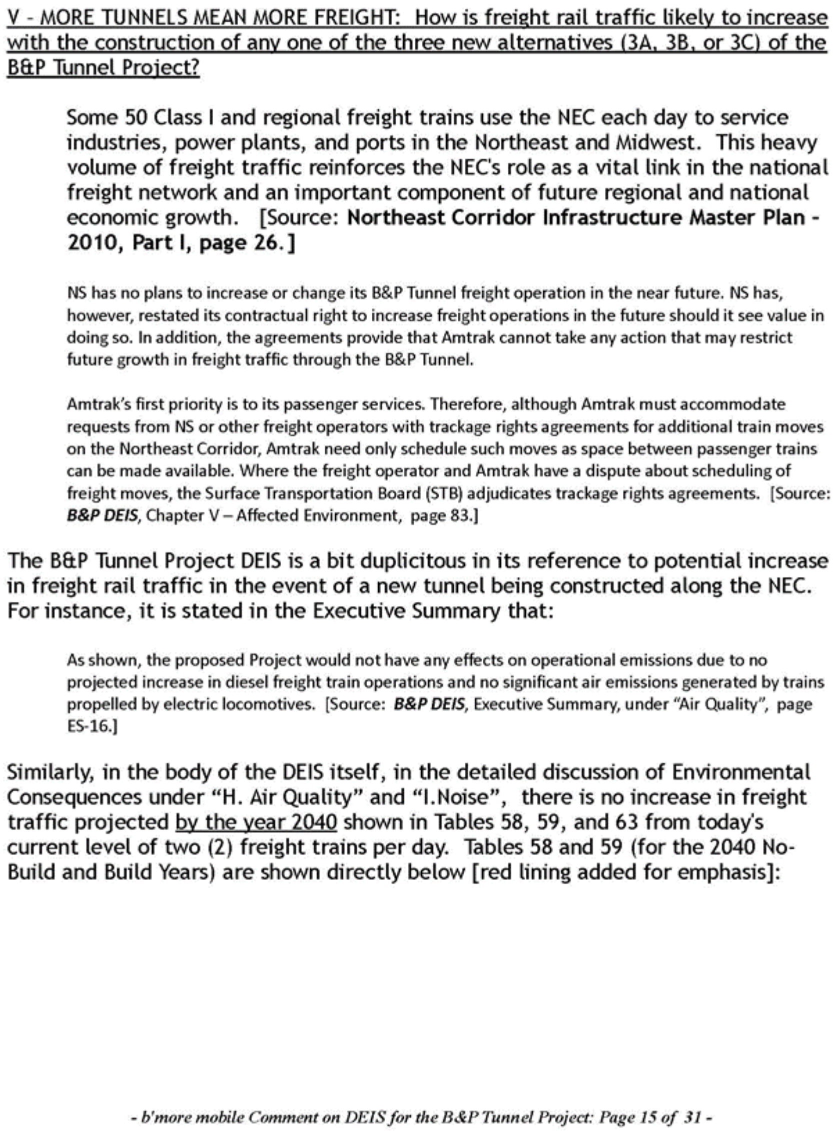

V – MORE TUNNELS MEAN MORE FREIGHT: How is freight rail traffic likely to increase with the construction of any one of the three new alternatives (3A, 3B, or 3C) of the B&P Tunnel Project?

> Some 50 Class I and regional freight trains use the NEC each day to service industries, power plants, and ports in the Northeast and Midwest. This heavy volume of freight traffic reinforces the NEC's role as a vital link in the national freight network and an important component of future regional and national economic growth. [Source: **Northeast Corridor Infrastructure Master Plan - 2010, Part I, page 26.**]
>
> NS has no plans to increase or change its B&P Tunnel freight operation in the near future. NS has, however, restated its contractual right to increase freight operations in the future should it see value in doing so. In addition, the agreements provide that Amtrak cannot take any action that may restrict future growth in freight traffic through the B&P Tunnel.
>
> Amtrak's first priority is to its passenger services. Therefore, although Amtrak must accommodate requests from NS or other freight operators with trackage rights agreements for additional train moves on the Northeast Corridor, Amtrak need only schedule such moves as space between passenger trains can be made available. Where the freight operator and Amtrak have a dispute about scheduling of freight moves, the Surface Transportation Board (STB) adjudicates trackage rights agreements. [Source: ***B&P DEIS***, Chapter V – Affected Environment, page 83.]

The B&P Tunnel Project DEIS is a bit duplicitous in its reference to potential increase in freight rail traffic in the event of a new tunnel being constructed along the NEC. For instance, it is stated in the Executive Summary that:

> As shown, the proposed Project would not have any effects on operational emissions due to no projected increase in diesel freight train operations and no significant air emissions generated by trains propelled by electric locomotives. [Source: ***B&P DEIS***, Executive Summary, under "Air Quality", page ES-16.]

Similarly, in the body of the DEIS itself, in the detailed discussion of Environmental Consequences under "H. Air Quality" and "I.Noise", there is no increase in freight traffic projected by the year 2040 shown in Tables 58, 59, and 63 from today's current level of two (2) freight trains per day. Tables 58 and 59 (for the 2040 No-Build and Build Years) are shown directly below [red lining added for emphasis]:

COMMENTS

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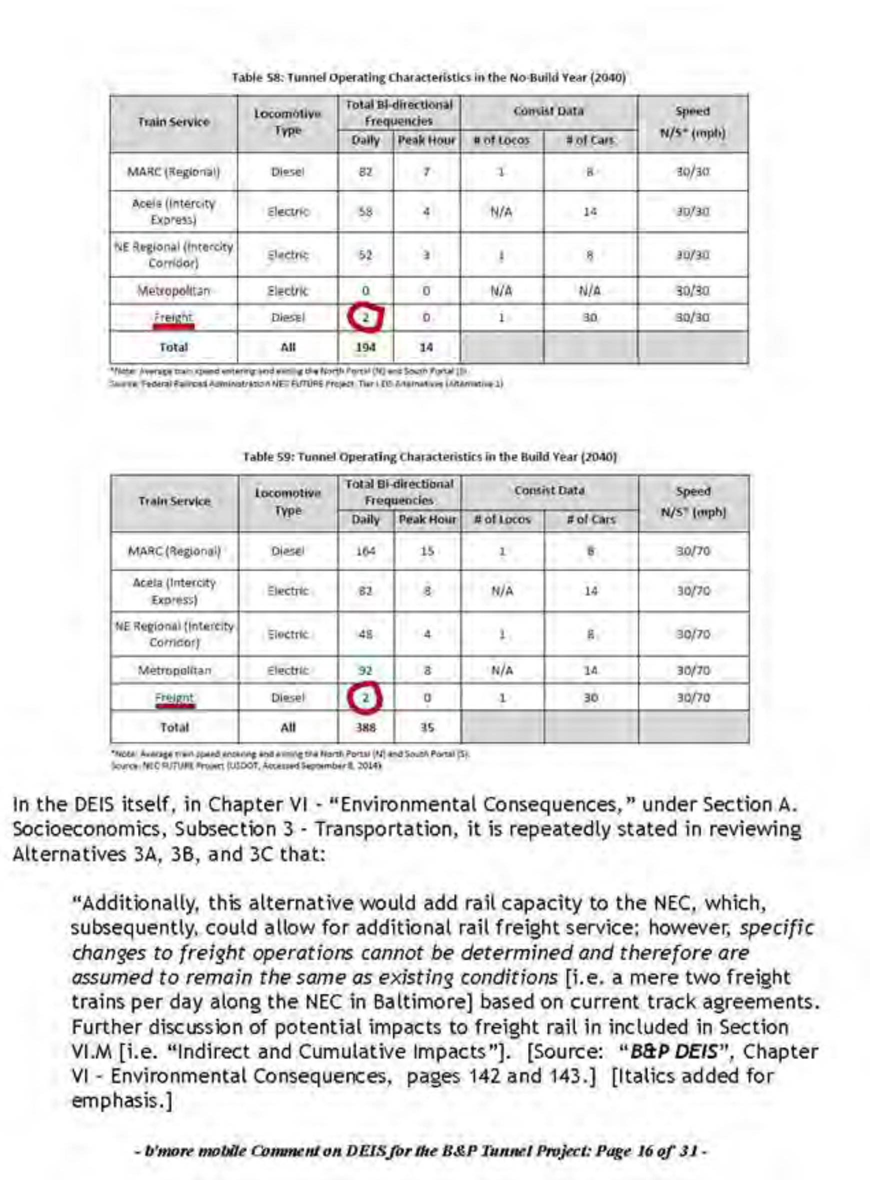

Table 58: Tunnel Operating Characteristics in the No-Build Year (2040)

Train Service	Locomotive Type	Total Bi-directional Frequencies		Consist Data		Speed N/S* (mph)
		Daily	Peak Hour	# of Locos	# of Cars	
MARC (Regional)	Diesel	82	7	1	8	30/30
Acela (Intercity Express)	Electric	58	4	N/A	14	30/30
NE Regional (Intercity Corridor)	Electric	52	3	1	8	30/30
Metropolitan	Electric	0	0	N/A	N/A	30/30
Freight	Diesel	2	0	1	30	30/30
Total	**All**	**194**	**14**			

*Note: Average train speed entering and exiting the North Portal (N) and South Portal (S).
Source: Federal Railroad Administration NEC FUTURE Project: Tier I EIS Alternatives (Alternative 1)

Table 59: Tunnel Operating Characteristics in the Build Year (2040)

Train Service	Locomotive Type	Total Bi-directional Frequencies		Consist Data		Speed N/S* (mph)
		Daily	Peak Hour	# of Locos	# of Cars	
MARC (Regional)	Diesel	164	15	1	8	30/70
Acela (Intercity Express)	Electric	82	8	N/A	14	30/70
NE Regional (Intercity Corridor)	Electric	48	4	1	8	30/70
Metropolitan	Electric	92	8	N/A	14	30/70
Freight	Diesel	2	0	1	30	30/70
Total	**All**	**388**	**35**			

*Note: Average train speed entering and exiting the North Portal (N) and South Portal (S).
Source: NEC FUTURE Project (USDOT, Accessed September 8, 2014)

In the DEIS itself, in Chapter VI - "Environmental Consequences," under Section A. Socioeconomics, Subsection 3 - Transportation, it is repeatedly stated in reviewing Alternatives 3A, 3B, and 3C that:

> "Additionally, this alternative would add rail capacity to the NEC, which, subsequently, could allow for additional rail freight service; however, *specific changes to freight operations cannot be determined and therefore are assumed to remain the same as existing conditions* [i.e. a mere two freight trains per day along the NEC in Baltimore] based on current track agreements. Further discussion of potential impacts to freight rail in included in Section VI.M [i.e. "Indirect and Cumulative Impacts"]. [Source: "***B&P DEIS***", Chapter VI - Environmental Consequences, pages 142 and 143.] [Italics added for emphasis.]

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COMMENTS

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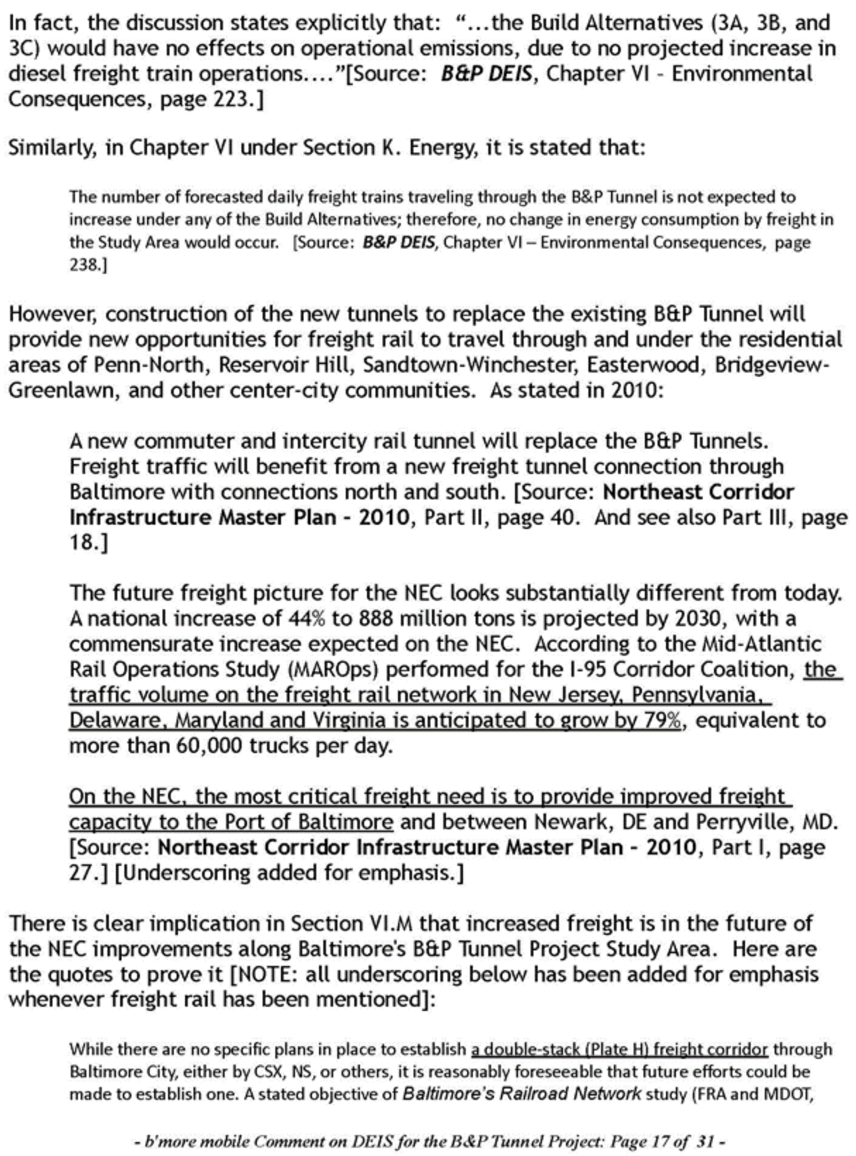

In fact, the discussion states explicitly that: "...the Build Alternatives (3A, 3B, and 3C) would have no effects on operational emissions, due to no projected increase in diesel freight train operations...."[Source: ***B&P DEIS***, Chapter VI - Environmental Consequences, page 223.]

Similarly, in Chapter VI under Section K. Energy, it is stated that:

> The number of forecasted daily freight trains traveling through the B&P Tunnel is not expected to increase under any of the Build Alternatives; therefore, no change in energy consumption by freight in the Study Area would occur. [Source: ***B&P DEIS***, Chapter VI – Environmental Consequences, page 238.]

However, construction of the new tunnels to replace the existing B&P Tunnel will provide new opportunities for freight rail to travel through and under the residential areas of Penn-North, Reservoir Hill, Sandtown-Winchester, Easterwood, Bridgeview-Greenlawn, and other center-city communities. As stated in 2010:

> A new commuter and intercity rail tunnel will replace the B&P Tunnels. Freight traffic will benefit from a new freight tunnel connection through Baltimore with connections north and south. [Source: **Northeast Corridor Infrastructure Master Plan - 2010**, Part II, page 40. And see also Part III, page 18.]
>
> The future freight picture for the NEC looks substantially different from today. A national increase of 44% to 888 million tons is projected by 2030, with a commensurate increase expected on the NEC. According to the Mid-Atlantic Rail Operations Study (MAROps) performed for the I-95 Corridor Coalition, the traffic volume on the freight rail network in New Jersey, Pennsylvania, Delaware, Maryland and Virginia is anticipated to grow by 79%, equivalent to more than 60,000 trucks per day.
>
> On the NEC, the most critical freight need is to provide improved freight capacity to the Port of Baltimore and between Newark, DE and Perryville, MD. [Source: **Northeast Corridor Infrastructure Master Plan - 2010**, Part I, page 27.] [Underscoring added for emphasis.]

There is clear implication in Section VI.M that increased freight is in the future of the NEC improvements along Baltimore's B&P Tunnel Project Study Area. Here are the quotes to prove it [NOTE: all underscoring below has been added for emphasis whenever freight rail has been mentioned]:

> While there are no specific plans in place to establish a double-stack (Plate H) freight corridor through Baltimore City, either by CSX, NS, or others, it is reasonably foreseeable that future efforts could be made to establish one. A stated objective of *Baltimore's Railroad Network* study (FRA and MDOT,

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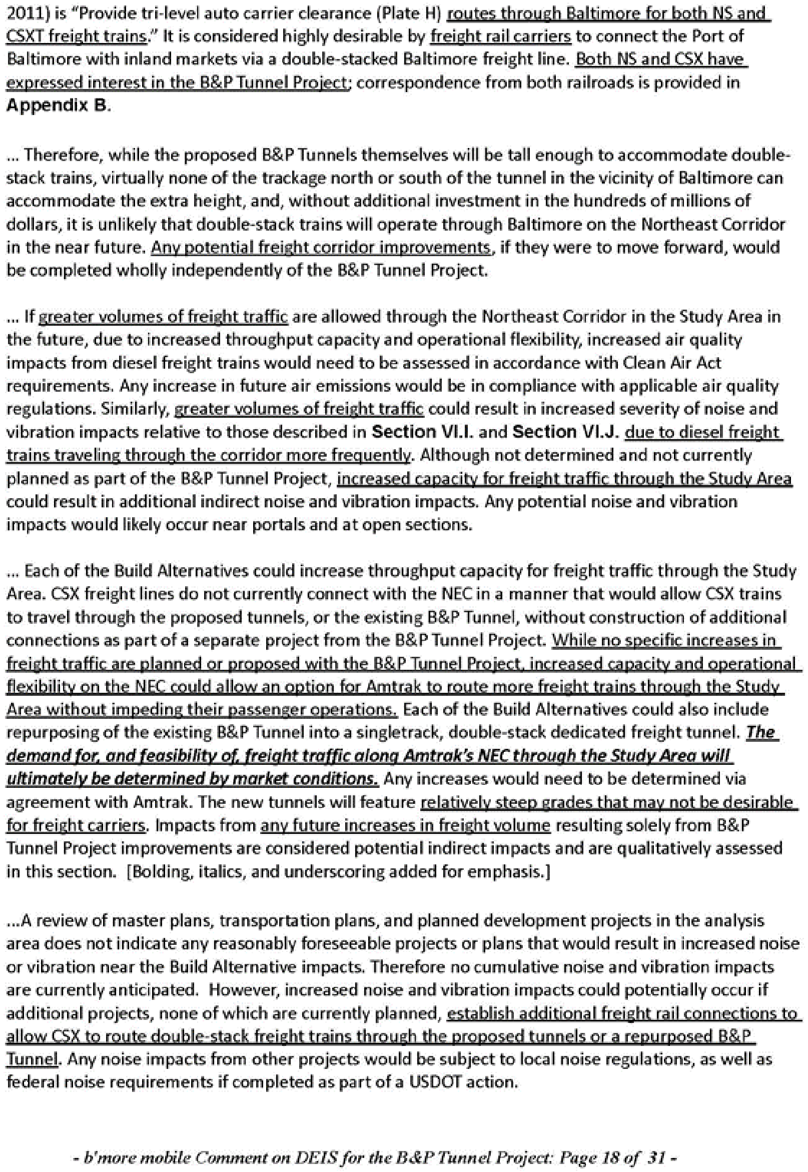

2011) is "Provide tri-level auto carrier clearance (Plate H) routes through Baltimore for both NS and CSXT freight trains." It is considered highly desirable by freight rail carriers to connect the Port of Baltimore with inland markets via a double-stacked Baltimore freight line. Both NS and CSX have expressed interest in the B&P Tunnel Project; correspondence from both railroads is provided in **Appendix B**.

... Therefore, while the proposed B&P Tunnels themselves will be tall enough to accommodate double-stack trains, virtually none of the trackage north or south of the tunnel in the vicinity of Baltimore can accommodate the extra height, and, without additional investment in the hundreds of millions of dollars, it is unlikely that double-stack trains will operate through Baltimore on the Northeast Corridor in the near future. Any potential freight corridor improvements, if they were to move forward, would be completed wholly independently of the B&P Tunnel Project.

... If greater volumes of freight traffic are allowed through the Northeast Corridor in the Study Area in the future, due to increased throughput capacity and operational flexibility, increased air quality impacts from diesel freight trains would need to be assessed in accordance with Clean Air Act requirements. Any increase in future air emissions would be in compliance with applicable air quality regulations. Similarly, greater volumes of freight traffic could result in increased severity of noise and vibration impacts relative to those described in **Section VI.I.** and **Section VI.J.** due to diesel freight trains traveling through the corridor more frequently. Although not determined and not currently planned as part of the B&P Tunnel Project, increased capacity for freight traffic through the Study Area could result in additional indirect noise and vibration impacts. Any potential noise and vibration impacts would likely occur near portals and at open sections.

... Each of the Build Alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the proposed tunnels, or the existing B&P Tunnel, without construction of additional connections as part of a separate project from the B&P Tunnel Project. While no specific increases in freight traffic are planned or proposed with the B&P Tunnel Project, increased capacity and operational flexibility on the NEC could allow an option for Amtrak to route more freight trains through the Study Area without impeding their passenger operations. Each of the Build Alternatives could also include repurposing of the existing B&P Tunnel into a singletrack, double-stack dedicated freight tunnel. ***The demand for, and feasibility of, freight traffic along Amtrak's NEC through the Study Area will ultimately be determined by market conditions.*** Any increases would need to be determined via agreement with Amtrak. The new tunnels will feature relatively steep grades that may not be desirable for freight carriers. Impacts from any future increases in freight volume resulting solely from B&P Tunnel Project improvements are considered potential indirect impacts and are qualitatively assessed in this section. [Bolding, italics, and underscoring added for emphasis.]

...A review of master plans, transportation plans, and planned development projects in the analysis area does not indicate any reasonably foreseeable projects or plans that would result in increased noise or vibration near the Build Alternative impacts. Therefore no cumulative noise and vibration impacts are currently anticipated. However, increased noise and vibration impacts could potentially occur if additional projects, none of which are currently planned, establish additional freight rail connections to allow CSX to route double-stack freight trains through the proposed tunnels or a repurposed B&P Tunnel. Any noise impacts from other projects would be subject to local noise regulations, as well as federal noise requirements if completed as part of a USDOT action.

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COMMENTS

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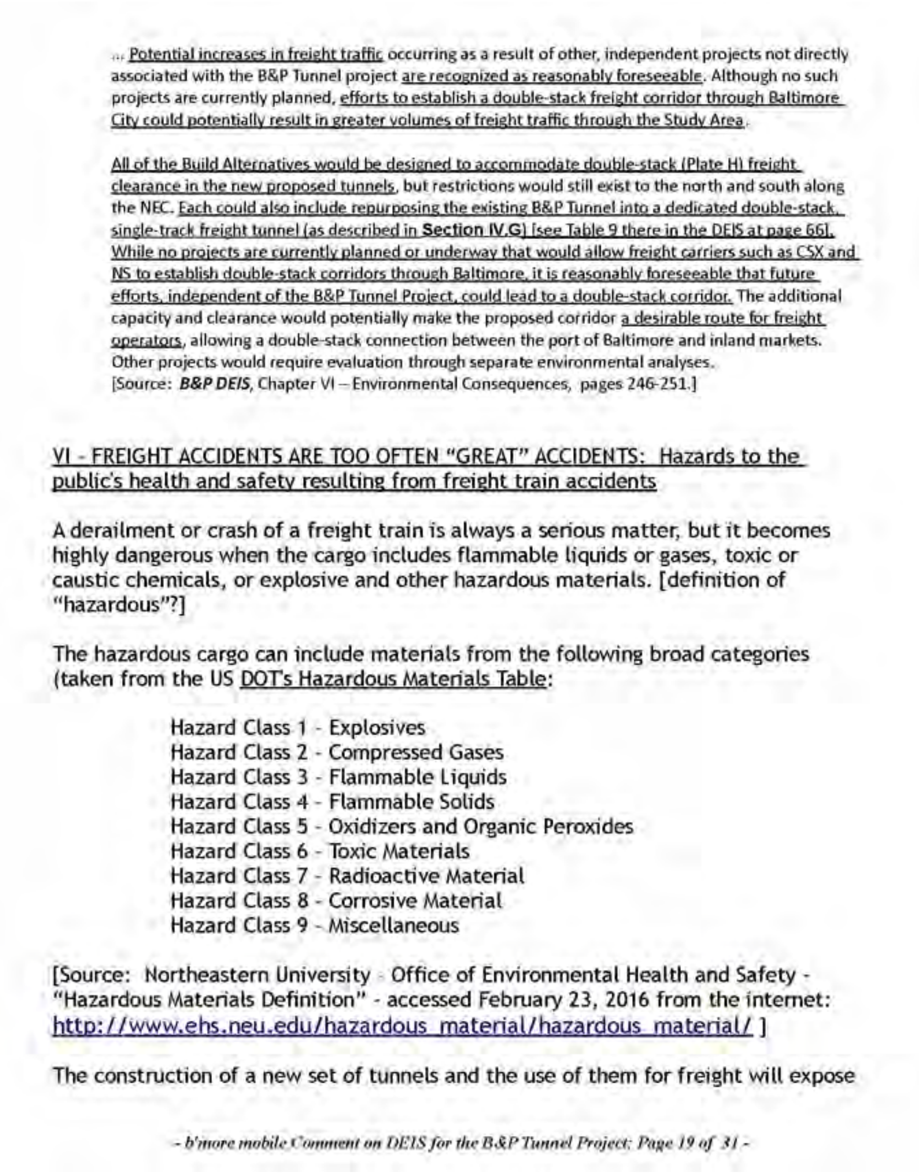

... Potential increases in freight traffic occurring as a result of other, independent projects not directly associated with the B&P Tunnel project are recognized as reasonably foreseeable. Although no such projects are currently planned, efforts to establish a double-stack freight corridor through Baltimore City could potentially result in greater volumes of freight traffic through the Study Area.

All of the Build Alternatives would be designed to accommodate double-stack (Plate H) freight clearance in the new proposed tunnels, but restrictions would still exist to the north and south along the NEC. Each could also include repurposing the existing B&P Tunnel into a dedicated double-stack, single-track freight tunnel (as described in **Section IV.G**) [see Table 9 there in the DEIS at page 66]. While no projects are currently planned or underway that would allow freight carriers such as CSX and NS to establish double-stack corridors through Baltimore, it is reasonably foreseeable that future efforts, independent of the B&P Tunnel Project, could lead to a double-stack corridor. The additional capacity and clearance would potentially make the proposed corridor a desirable route for freight operators, allowing a double-stack connection between the port of Baltimore and inland markets. Other projects would require evaluation through separate environmental analyses.
[Source: ***B&P DEIS***, Chapter VI – Environmental Consequences, pages 246-251.]

VI - FREIGHT ACCIDENTS ARE TOO OFTEN "GREAT" ACCIDENTS: Hazards to the public's health and safety resulting from freight train accidents

A derailment or crash of a freight train is always a serious matter, but it becomes highly dangerous when the cargo includes flammable liquids or gases, toxic or caustic chemicals, or explosive and other hazardous materials. [definition of "hazardous"?]

The hazardous cargo can include materials from the following broad categories (taken from the US DOT's Hazardous Materials Table:

Hazard Class 1 - Explosives
Hazard Class 2 - Compressed Gases
Hazard Class 3 - Flammable Liquids
Hazard Class 4 - Flammable Solids
Hazard Class 5 - Oxidizers and Organic Peroxides
Hazard Class 6 - Toxic Materials
Hazard Class 7 - Radioactive Material
Hazard Class 8 - Corrosive Material
Hazard Class 9 - Miscellaneous

[Source: Northeastern University - Office of Environmental Health and Safety - "Hazardous Materials Definition" - accessed February 23, 2016 from the internet: http://www.ehs.neu.edu/hazardous_material/hazardous_material/]

The construction of a new set of tunnels and the use of them for freight will expose

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the people and human institutions located within the B&P Tunnel Project Study Area to much greater risks as a result of any increases in freight rail traffic. What would be the specific nature of these risks? Fire, explosion, corrosive or toxic liquids or solids, toxic fumes, temporary or permanent displacement of persons from homes or businesses.

Some significant risks result from inherently dangerous materials (hazardous, toxic, caustic, explosive, etc.).

Others risks include fire, which can consume all sort of other, normally non-hazardous cargo and people and property in the area adjacent to a train derailment or collision.

It is of the greatest importance and relevance that Baltimore City has itself had very recent experience with a freight train derailment, which resulted in the release of hazardous cargo. This was the Howard Street Tunnel Derailment and Fire involving a CSX train on July 18, 2001 - less than fifteen years ago. The official National Transportation Safety Board (NTSB) Railroad Accident Brief stated, in pertinent part as follows:

The 2001 Howard Street Tunnel Derailment and Fire

> **Synopsis**
>
> On Wednesday, July 18, 2001, at 3:08 p.m., eastbound CSX[1] freight train L-412-16 derailed 11 of its 60 cars while passing through the Howard Street Tunnel in Baltimore, Maryland. Four of the 11 derailed cars were tank cars: 1 contained tripropylene, a flammable liquid; 2 contained hydrochloric acid; and 1 contained di(2-ethylhexyl) phthalate, which is a plasticizer and an environmentally hazardous substance. The derailed tank car containing tripropylene was punctured, and the escaping tripropylene ignited. The fire spread to the contents of several adjacent cars, creating heat, smoke, and fumes that restricted access to the tunnel for several days. A 40-inch diameter water main directly above the tunnel broke in the hours following the accident and flooded the tunnel with millions of gallons of water. Five emergency responders sustained minor injuries while involved with the on-site emergency. Total costs associated with the accident, including response and clean-up costs, were estimated at about $12 million. [At page 1]
>
> ***Transportation of Hazardous Materials Through the Tunnel***
>
> During the derailment, a tank car released more than 28,600 gallons of tripropylene. The flammable tripropylene was ignited, and the subsequent fire led to the ignition of paper and wood products in adjacent freight cars. The burning wood and paper products sustained the fire over the next several days. The release of the tripropylene initiated the fire and increased the severity of the accident.
>
> Immediately behind the ruptured tripropylene car were two tank cars containing hydrochloric

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> acid and one tank car loaded with di(2-ethylhexyl) phthalate, which is an environmentally hazardous substance. Exposure of the hydrochloric acid tank cars to high temperatures for the duration of the fire resulted in thermal degradation of the cars' rubber linings and corrosive penetration of one of the cars by the acid.
>
> The CSX route through Baltimore and the Howard Street Tunnel is a major rail artery and is a designated hazardous materials key route for all types and classes of hazardous materials. Congress recognized the significance of this rail route when it mandated that the DOT conduct a rail infrastructure study[17] for passenger and freight routes in the Baltimore corridor. Although the FRA had not completed the final report for the study as of August 2004, it has indicated that three options for improving the freight infrastructure through Baltimore have been considered. All three options involve the construction of new, modern tunnels with estimated costs ranging from $1 billion to $3 billion. Because of the scope and expense of these options, replacement of the Howard Street Tunnel is not assured, and at best, several years will be required to complete such a project.
>
> Given these factors, improving the safety of the transportation of hazardous materials through the Howard Street Tunnel and minimizing the potential for more serious hazardous materials incidents in the tunnel will, in the Safety Board's view, depend upon shared communication and coordination between CSX and the city of Baltimore about the volumes and types of hazardous materials that are transported through the tunnel, anticipation of the types of incidents that might occur, and the capabilities and/or limitations of the city to access the tunnel and respond to any hazardous materials incident in it. The desired level of communication and coordination can be achieved through comprehensive emergency preparedness planning, including joint drills and exercises. [At page 16.]
>
> [17] U.S. Department of Transportation's *Baltimore, Maryland, Freight and Passenger Infrastructure Study*, per Public Law 107-87. [at page 18] [Underscoring added for emphasis.]

As can be seen in the NTSB Accident Brief above, there is reference made to plans which are underway for "improving the freight infrastructure through Baltimore." These plans are mentioned above at page 6.

What about the accident records for the two principal freight carriers which pass through Baltimore City: CSX and Norfolk Southern? Here are the details from the official numbers about their freight accidents from the website of the Federal Railway Administration of the US Department of Transportation. The period covered is the last fifteen years - 2001 to 2015 - the period of time since the Howard Street Tunnel derailment took place here in Baltimore City.

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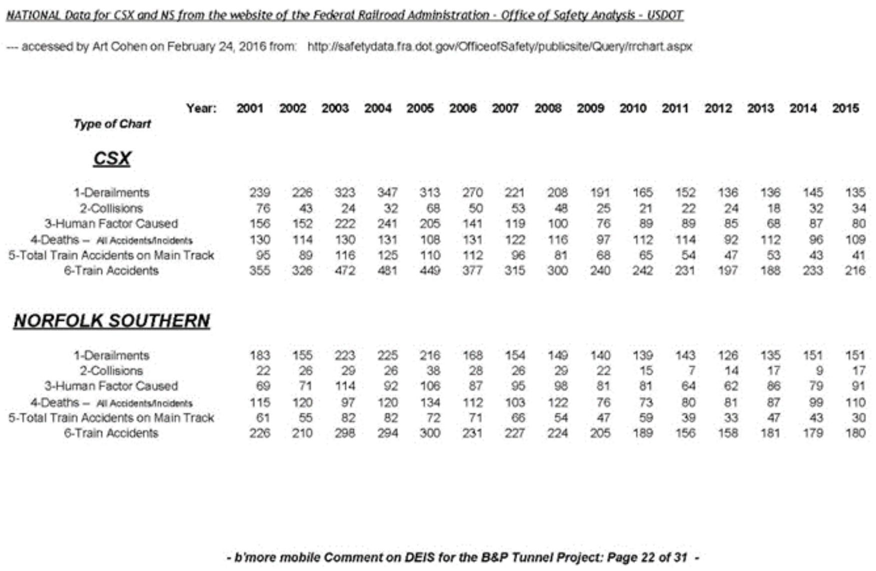

NATIONAL Data for CSX and NS from the website of the Federal Railroad Administration - Office of Safety Analysis - USDOT

--- accessed by Art Cohen on February 24, 2016 from: http://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/rrchart.aspx

Year: *Type of Chart*	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CSX															
1-Derailments	239	226	323	347	313	270	221	208	191	165	152	136	136	145	135
2-Collisions	76	43	24	32	68	50	53	48	25	21	22	24	18	32	34
3-Human Factor Caused	156	152	222	241	205	141	119	100	76	89	89	85	68	87	80
4-Deaths -- All Accidents/Incidents	130	114	130	131	108	131	122	116	97	112	114	92	112	96	109
5-Total Train Accidents on Main Track	95	89	116	125	110	112	96	81	68	65	54	47	53	43	41
6-Train Accidents	355	326	472	481	449	377	315	300	240	242	231	197	188	233	216
NORFOLK SOUTHERN															
1-Derailments	183	155	223	225	216	168	154	149	140	139	143	126	135	151	151
2-Collisions	22	26	29	26	38	28	26	29	22	15	7	14	17	9	17
3-Human Factor Caused	69	71	114	92	106	87	95	98	81	81	64	62	86	79	91
4-Deaths -- All Accidents/Incidents	115	120	97	120	134	112	103	122	76	73	80	81	87	99	110
5-Total Train Accidents on Main Track	61	55	82	82	72	71	66	54	47	59	39	33	47	43	30
6-Train Accidents	226	210	298	294	300	231	227	224	205	189	156	158	181	179	180

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The data provided in this spreadsheet for these two freight rail companies, CSX and Norfolk Southern, are national and not local. However, even as such, they are useful for drawing some general conclusions about the dangers and hazards which attend the hourly and daily movement of freight trains around Baltimore City. As with all transportation, freight rail transportation can be expected to have its accidents, with their respective consequences in terms of death, injury, and destruction of property. CSX and Norfolk Southern are the two principal rail freight lines serving the Baltimore region.

VII - BETTER CHOICES: AN OUNCE OF PREVENTION IS WORTH IT!: Where can hazardous freight cargo be routed or re-routed in and around Baltimore City so as to avoid densely-populated urban areas such as the B&P Tunnel Project Study Area?

With recent derailments of Bakken formation crude oil tanker cars in Lac Mégantic, near Lynchburg, Virginia, and in other locations, the public concern about freight rail safety has greatly increased. Here in Baltimore, recent developments have included the following:

1) Baltimore Circuit Court Judge Lawrence P. Fletcher Hill's ruled in August 2015 that Norfolk Southern Railway Company cannot legally block the Maryland Department of the Environment (MDE) from releasing to the public information about the volume and frequency of its crude oil shipments. [Source: Norfolk Southern Railway Company vs. Maryland Department of the Environment and Maryland Emergency Management Agency - in the Circuit Court of Baltimore City, Case No. 24-C-14-004367]

2) In January 2016, Baltimore City Council President Bernard "Jack" Young introduced an ordinance (Council Bill 16-0621) "Transport of Crude Oil by Rail" which would require that both a health impact assessment and a risk assessment be conducted "of the transportation of crude oil by rail in or through Baltimore City or within 10 miles of the City's boundaries." Council President Young was joined by thirteen of the fourteen other Council members in sponsoring the bill, which was introduced at the request of the Chesapeake Climate Action Network (CCAN).

3) Finally, on February 11, 2016, just two weeks ago, a large public meeting was held by CCAN to introduce the Baltimore City public to Marilaine Savard, a young mother from Lac Mégantic in Quebec Province, Canada, who was a witness to the devastating crude oil fire there on July 6, 2013 when a 74-car freight train carrying Bakken Formation light crude oil derailed, crashed, exploded and burned for nearly two days. Forty-two people were confirmed dead, with five more missing and presumed dead. More than 30 buildings in the town's centre, roughly half of the downtown area, were destroyed and all but three of the thirty-nine remaining downtown buildings are to be demolished due to petroleum contamination of the

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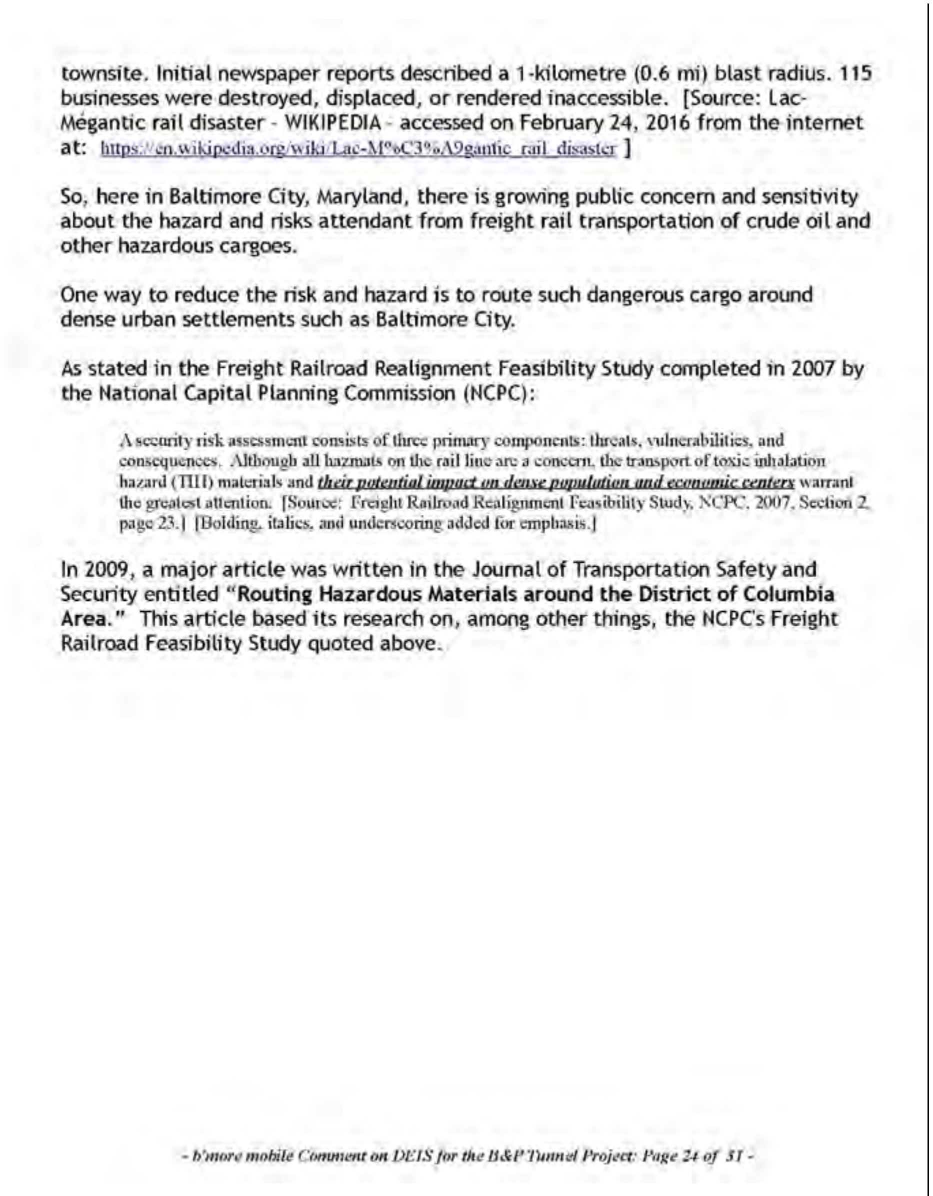

townsite. Initial newspaper reports described a 1-kilometre (0.6 mi) blast radius. 115 businesses were destroyed, displaced, or rendered inaccessible. [Source: Lac-Mégantic rail disaster - WIKIPEDIA - accessed on February 24, 2016 from the internet at: https://en.wikipedia.org/wiki/Lac-M%C3%A9gantic_rail_disaster]

So, here in Baltimore City, Maryland, there is growing public concern and sensitivity about the hazard and risks attendant from freight rail transportation of crude oil and other hazardous cargoes.

One way to reduce the risk and hazard is to route such dangerous cargo around dense urban settlements such as Baltimore City.

As stated in the Freight Railroad Realignment Feasibility Study completed in 2007 by the National Capital Planning Commission (NCPC):

> A security risk assessment consists of three primary components: threats, vulnerabilities, and consequences. Although all hazmats on the rail line are a concern, the transport of toxic inhalation hazard (TIH) materials and ***their potential impact on dense population and economic centers*** warrant the greatest attention. [Source: Freight Railroad Realignment Feasibility Study, NCPC, 2007, Section 2, page 23.] [Bolding, italics, and underscoring added for emphasis.]

In 2009, a major article was written in the Journal of Transportation Safety and Security entitled **"Routing Hazardous Materials around the District of Columbia Area."** This article based its research on, among other things, the NCPC's Freight Railroad Feasibility Study quoted above.

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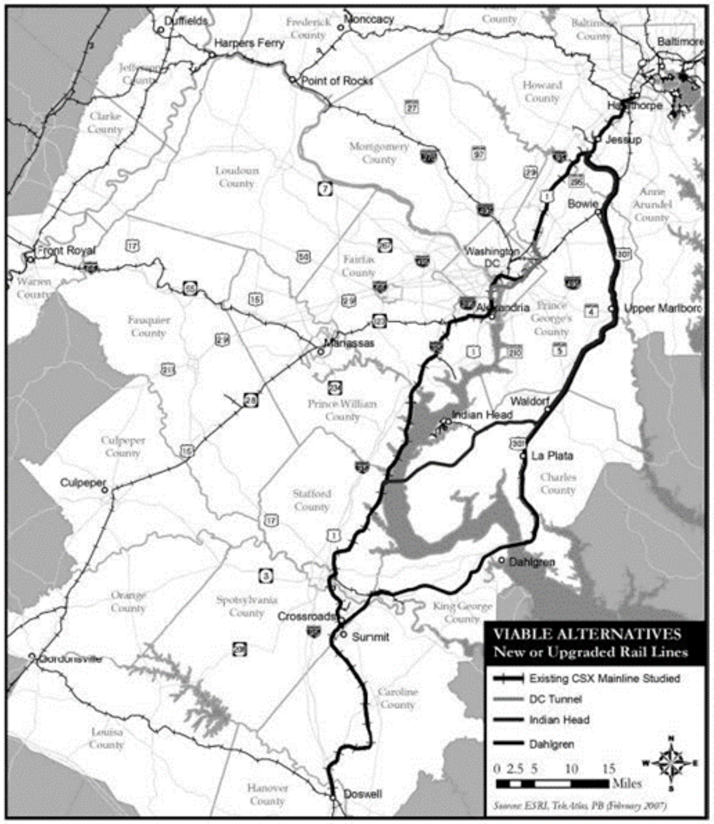

Source: ESRI, TeleAtlas, PB (February 2007)

The 2009 article evaluated alternate rail routes around the Washington, DC area. A map of such routes is shown below (from page 300 of the Journal).

If this can be suggested for the District of Columbia, surely it can be considered as well for the equally population-dense areas of Baltimore City, just a few miles to the northeast of DC.

The principal danger to the people of the B&P Tunnel Project Study Area is from the transportation of hazardous freight through any one or more of the proposed four

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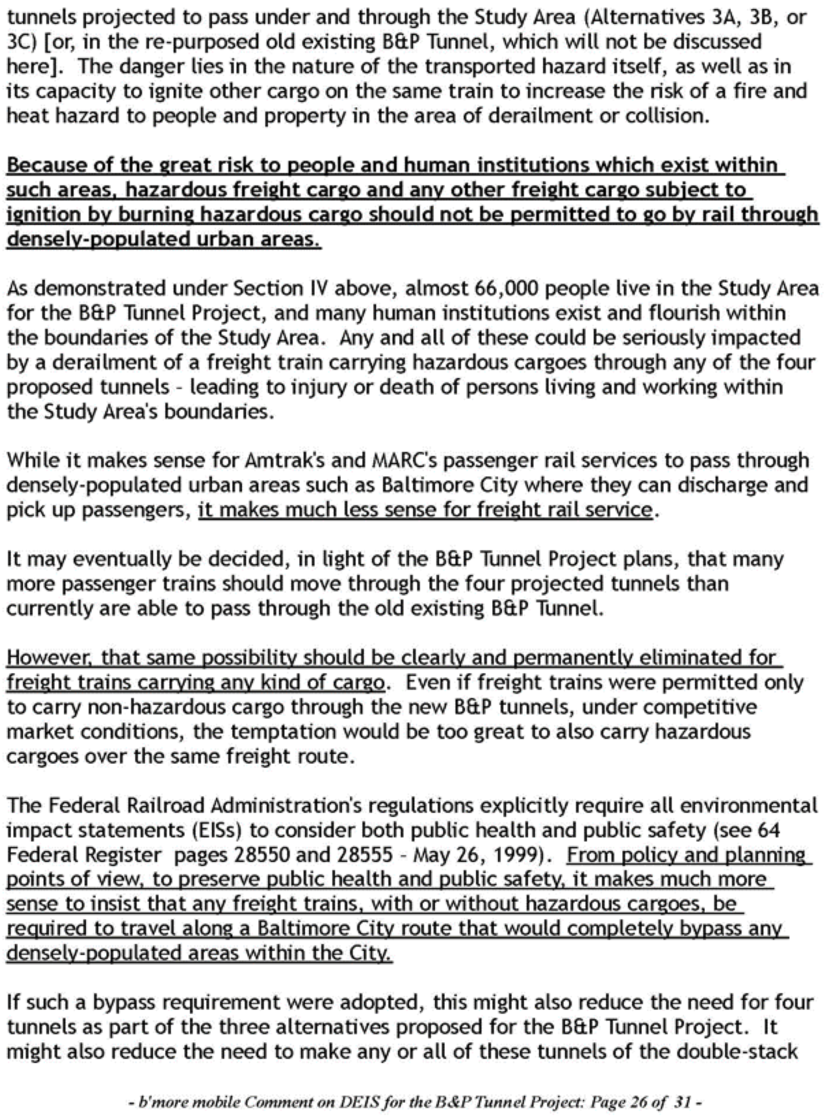

tunnels projected to pass under and through the Study Area (Alternatives 3A, 3B, or 3C) [or, in the re-purposed old existing B&P Tunnel, which will not be discussed here]. The danger lies in the nature of the transported hazard itself, as well as in its capacity to ignite other cargo on the same train to increase the risk of a fire and heat hazard to people and property in the area of derailment or collision.

Because of the great risk to people and human institutions which exist within such areas, hazardous freight cargo and any other freight cargo subject to ignition by burning hazardous cargo should not be permitted to go by rail through densely-populated urban areas.

As demonstrated under Section IV above, almost 66,000 people live in the Study Area for the B&P Tunnel Project, and many human institutions exist and flourish within the boundaries of the Study Area. Any and all of these could be seriously impacted by a derailment of a freight train carrying hazardous cargoes through any of the four proposed tunnels - leading to injury or death of persons living and working within the Study Area's boundaries.

While it makes sense for Amtrak's and MARC's passenger rail services to pass through densely-populated urban areas such as Baltimore City where they can discharge and pick up passengers, it makes much less sense for freight rail service.

It may eventually be decided, in light of the B&P Tunnel Project plans, that many more passenger trains should move through the four projected tunnels than currently are able to pass through the old existing B&P Tunnel.

However, that same possibility should be clearly and permanently eliminated for freight trains carrying any kind of cargo. Even if freight trains were permitted only to carry non-hazardous cargo through the new B&P tunnels, under competitive market conditions, the temptation would be too great to also carry hazardous cargoes over the same freight route.

The Federal Railroad Administration's regulations explicitly require all environmental impact statements (EISs) to consider both public health and public safety (see 64 Federal Register pages 28550 and 28555 - May 26, 1999). From policy and planning points of view, to preserve public health and public safety, it makes much more sense to insist that any freight trains, with or without hazardous cargoes, be required to travel along a Baltimore City route that would completely bypass any densely-populated areas within the City.

If such a bypass requirement were adopted, this might also reduce the need for four tunnels as part of the three alternatives proposed for the B&P Tunnel Project. It might also reduce the need to make any or all of these tunnels of the double-stack

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variety to accommodate Plate H freight. If this need reduction were to happen, the price tag for the new passenger tunnels might become significantly lower and more affordable for the local, state, and federal governments responsible for implementing rail transportation plans.

In any case, the B&P Tunnel Project DEIS has already done some analysis of "Avoidance Alternatives" pursuant to the requirements of Title 23 US Code PART 774 —PARKS, RECREATION AREAS, WILDLIFE AND WATERFOWL REFUGES, AND HISTORIC SITES (Section 4(f)); and the Federal Railroad Administration's own procedures for considering environmental impacts (64 Federal Register pages 28545-28556).
to assess the possibility of bypassing the Study Area altogether. [Source: ***B&P DEIS***, Chapter VI - Environmental Consequences, pages 195-198.]

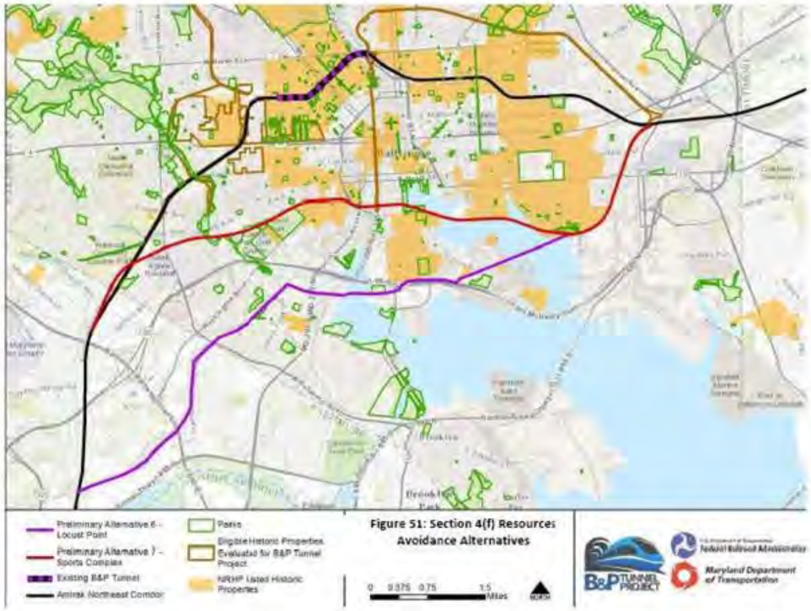
Preliminary Alternative 6 – Locust Point
Preliminary Alternative 7 – Sports Complex
Existing B&P Tunnel
Amtrak Northeast Corridor
Parks
Eligible Historic Properties Evaluated for B&P Tunnel Project
NRHP Listed Historic Properties
0 0.375 0.75 1.5 Miles
Federal Railroad Administration
Maryland Department of Transportation

Figure 51: Section 4(f) Resources Avoidance Alternatives

It is significant that the above analysis of "Avoidance Alternatives" refers to the Preliminary Alternatives Screening Report (PASR) process in building its case for excluding both Alternatives 6 and 7 (Locust Point and the Sports Complex, respectively). Furthermore, as regards the Sports Complex Alternative (#7), the

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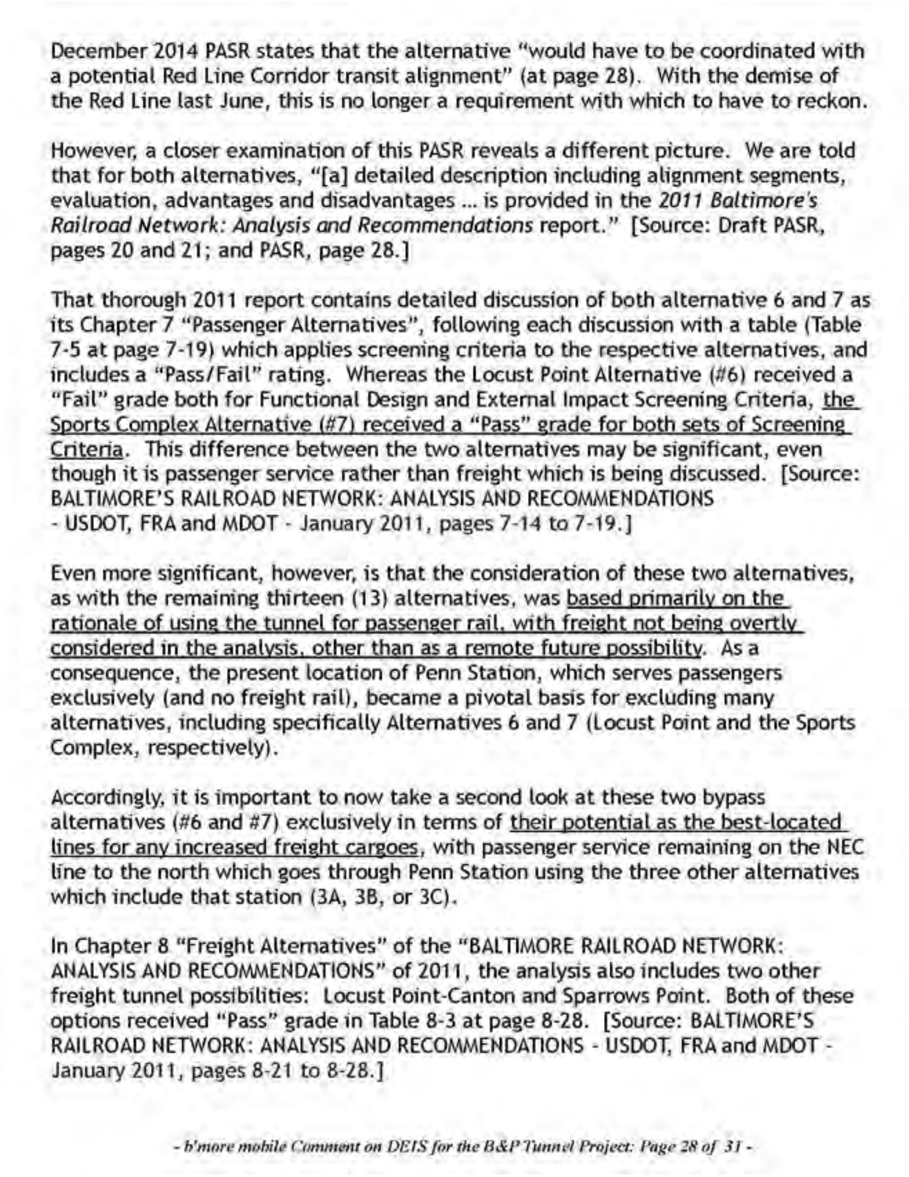


December 2014 PASR states that the alternative "would have to be coordinated with a potential Red Line Corridor transit alignment" (at page 28). With the demise of the Red Line last June, this is no longer a requirement with which to have to reckon.

However, a closer examination of this PASR reveals a different picture. We are told that for both alternatives, "[a] detailed description including alignment segments, evaluation, advantages and disadvantages ... is provided in the *2011 Baltimore's Railroad Network: Analysis and Recommendations* report." [Source: Draft PASR, pages 20 and 21; and PASR, page 28.]

That thorough 2011 report contains detailed discussion of both alternative 6 and 7 as its Chapter 7 "Passenger Alternatives", following each discussion with a table (Table 7-5 at page 7-19) which applies screening criteria to the respective alternatives, and includes a "Pass/Fail" rating. Whereas the Locust Point Alternative (#6) received a "Fail" grade both for Functional Design and External Impact Screening Criteria, the Sports Complex Alternative (#7) received a "Pass" grade for both sets of Screening Criteria. This difference between the two alternatives may be significant, even though it is passenger service rather than freight which is being discussed. [Source: BALTIMORE'S RAILROAD NETWORK: ANALYSIS AND RECOMMENDATIONS - USDOT, FRA and MDOT - January 2011, pages 7-14 to 7-19.]

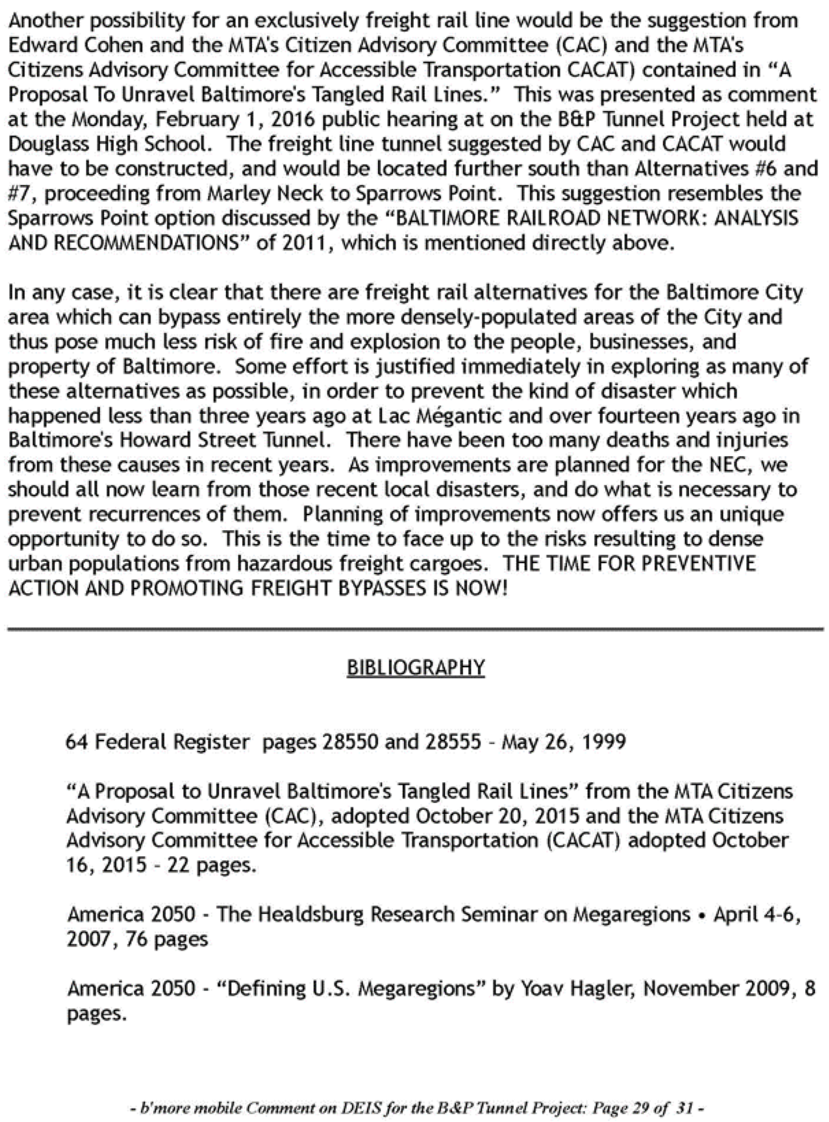
Even more significant, however, is that the consideration of these two alternatives, as with the remaining thirteen (13) alternatives, was based primarily on the rationale of using the tunnel for passenger rail, with freight not being overtly considered in the analysis, other than as a remote future possibility. As a consequence, the present location of Penn Station, which serves passengers exclusively (and no freight rail), became a pivotal basis for excluding many alternatives, including specifically Alternatives 6 and 7 (Locust Point and the Sports Complex, respectively).

Accordingly, it is important to now take a second look at these two bypass alternatives (#6 and #7) exclusively in terms of their potential as the best-located lines for any increased freight cargoes, with passenger service remaining on the NEC line to the north which goes through Penn Station using the three other alternatives which include that station (3A, 3B, or 3C).

In Chapter 8 "Freight Alternatives" of the "BALTIMORE RAILROAD NETWORK: ANALYSIS AND RECOMMENDATIONS" of 2011, the analysis also includes two other freight tunnel possibilities: Locust Point-Canton and Sparrows Point. Both of these options received "Pass" grade in Table 8-3 at page 8-28. [Source: BALTIMORE'S RAILROAD NETWORK: ANALYSIS AND RECOMMENDATIONS - USDOT, FRA and MDOT - January 2011, pages 8-21 to 8-28.]

COMMENTS

RESPONSES



Another possibility for an exclusively freight rail line would be the suggestion from Edward Cohen and the MTA's Citizen Advisory Committee (CAC) and the MTA's Citizens Advisory Committee for Accessible Transportation CACAT) contained in "A Proposal To Unravel Baltimore's Tangled Rail Lines." This was presented as comment at the Monday, February 1, 2016 public hearing at on the B&P Tunnel Project held at Douglass High School. The freight line tunnel suggested by CAC and CACAT would have to be constructed, and would be located further south than Alternatives #6 and #7, proceeding from Marley Neck to Sparrows Point. This suggestion resembles the Sparrows Point option discussed by the "BALTIMORE RAILROAD NETWORK: ANALYSIS AND RECOMMENDATIONS" of 2011, which is mentioned directly above.

In any case, it is clear that there are freight rail alternatives for the Baltimore City area which can bypass entirely the more densely-populated areas of the City and thus pose much less risk of fire and explosion to the people, businesses, and property of Baltimore. Some effort is justified immediately in exploring as many of these alternatives as possible, in order to prevent the kind of disaster which happened less than three years ago at Lac Mégantic and over fourteen years ago in Baltimore's Howard Street Tunnel. There have been too many deaths and injuries from these causes in recent years. As improvements are planned for the NEC, we should all now learn from those recent local disasters, and do what is necessary to prevent recurrences of them. Planning of improvements now offers us an unique opportunity to do so. This is the time to face up to the risks resulting to dense urban populations from hazardous freight cargoes. THE TIME FOR PREVENTIVE ACTION AND PROMOTING FREIGHT BYPASSES IS NOW!

BIBLIOGRAPHY

64 Federal Register pages 28550 and 28555 – May 26, 1999

"A Proposal to Unravel Baltimore's Tangled Rail Lines" from the MTA Citizens Advisory Committee (CAC), adopted October 20, 2015 and the MTA Citizens Advisory Committee for Accessible Transportation (CACAT) adopted October 16, 2015 – 22 pages.

America 2050 - The Healdsburg Research Seminar on Megaregions • April 4-6, 2007, 76 pages

America 2050 - "Defining U.S. Megaregions" by Yoav Hagler, November 2009, 8 pages.

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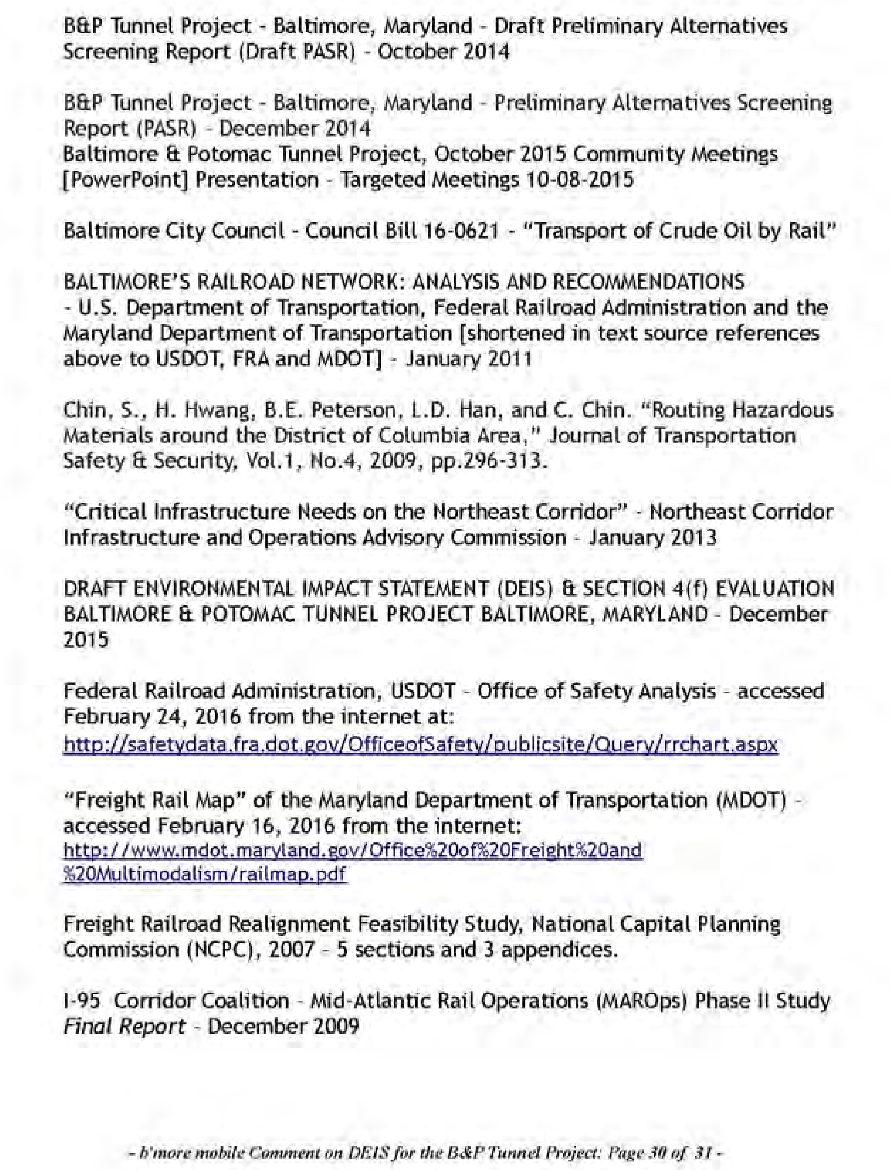

B&P Tunnel Project - Baltimore, Maryland - Draft Preliminary Alternatives Screening Report (Draft PASR) - October 2014

B&P Tunnel Project - Baltimore, Maryland - Preliminary Alternatives Screening Report (PASR) - December 2014
Baltimore & Potomac Tunnel Project, October 2015 Community Meetings [PowerPoint] Presentation - Targeted Meetings 10-08-2015

Baltimore City Council - Council Bill 16-0621 - "Transport of Crude Oil by Rail"

BALTIMORE'S RAILROAD NETWORK: ANALYSIS AND RECOMMENDATIONS - U.S. Department of Transportation, Federal Railroad Administration and the Maryland Department of Transportation [shortened in text source references above to USDOT, FRA and MDOT] - January 2011

Chin, S., H. Hwang, B.E. Peterson, L.D. Han, and C. Chin. "Routing Hazardous Materials around the District of Columbia Area," Journal of Transportation Safety & Security, Vol.1, No.4, 2009, pp.296-313.

"Critical Infrastructure Needs on the Northeast Corridor" - Northeast Corridor Infrastructure and Operations Advisory Commission - January 2013

DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) & SECTION 4(f) EVALUATION BALTIMORE & POTOMAC TUNNEL PROJECT BALTIMORE, MARYLAND - December 2015

Federal Railroad Administration, USDOT - Office of Safety Analysis - accessed February 24, 2016 from the internet at:
http://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/rrchart.aspx

"Freight Rail Map" of the Maryland Department of Transportation (MDOT) - accessed February 16, 2016 from the internet:
http://www.mdot.maryland.gov/Office%20of%20Freight%20and%20Multimodalism/railmap.pdf

Freight Railroad Realignment Feasibility Study, National Capital Planning Commission (NCPC), 2007 - 5 sections and 3 appendices.

I-95 Corridor Coalition - Mid-Atlantic Rail Operations (MAROps) Phase II Study *Final Report* - December 2009

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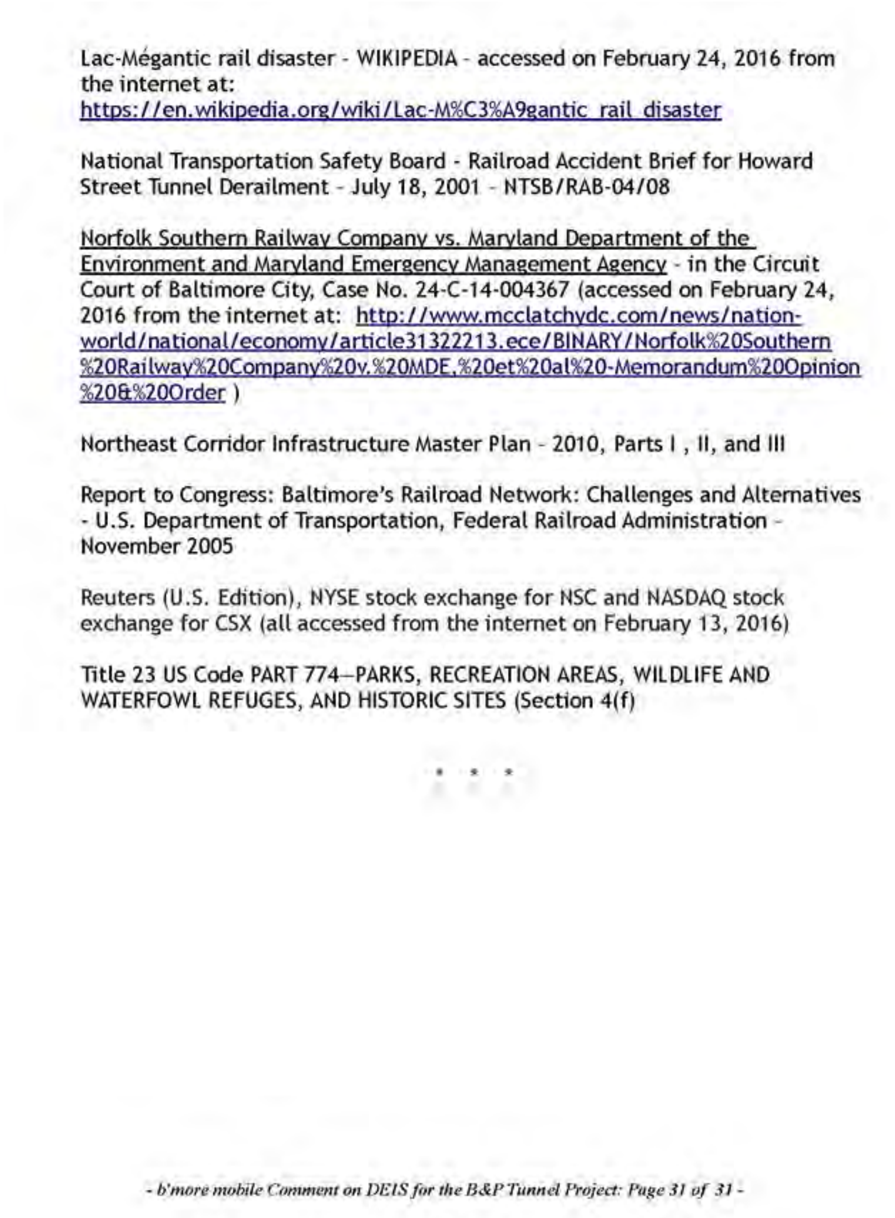
RESPONSES



Lac-Mégantic rail disaster - WIKIPEDIA - accessed on February 24, 2016 from the internet at: https://en.wikipedia.org/wiki/Lac-M%C3%A9gantic_rail_disaster

National Transportation Safety Board - Railroad Accident Brief for Howard Street Tunnel Derailment - July 18, 2001 - NTSB/RAB-04/08

Norfolk Southern Railway Company vs. Maryland Department of the Environment and Maryland Emergency Management Agency - in the Circuit Court of Baltimore City, Case No. 24-C-14-004367 (accessed on February 24, 2016 from the internet at: http://www.mcclatchydc.com/news/nation-world/national/economy/article31322213.ece/BINARY/Norfolk%20Southern%20Railway%20Company%20v.%20MDE,%20et%20al%20-Memorandum%20Opinion%20&%20Order)

Northeast Corridor Infrastructure Master Plan - 2010, Parts I , II, and III

Report to Congress: Baltimore's Railroad Network: Challenges and Alternatives - U.S. Department of Transportation, Federal Railroad Administration - November 2005

Reuters (U.S. Edition), NYSE stock exchange for NSC and NASDAQ stock exchange for CSX (all accessed from the internet on February 13, 2016)

Title 23 US Code PART 774—PARKS, RECREATION AREAS, WILDLIFE AND WATERFOWL REFUGES, AND HISTORIC SITES (Section 4(f)

* * *

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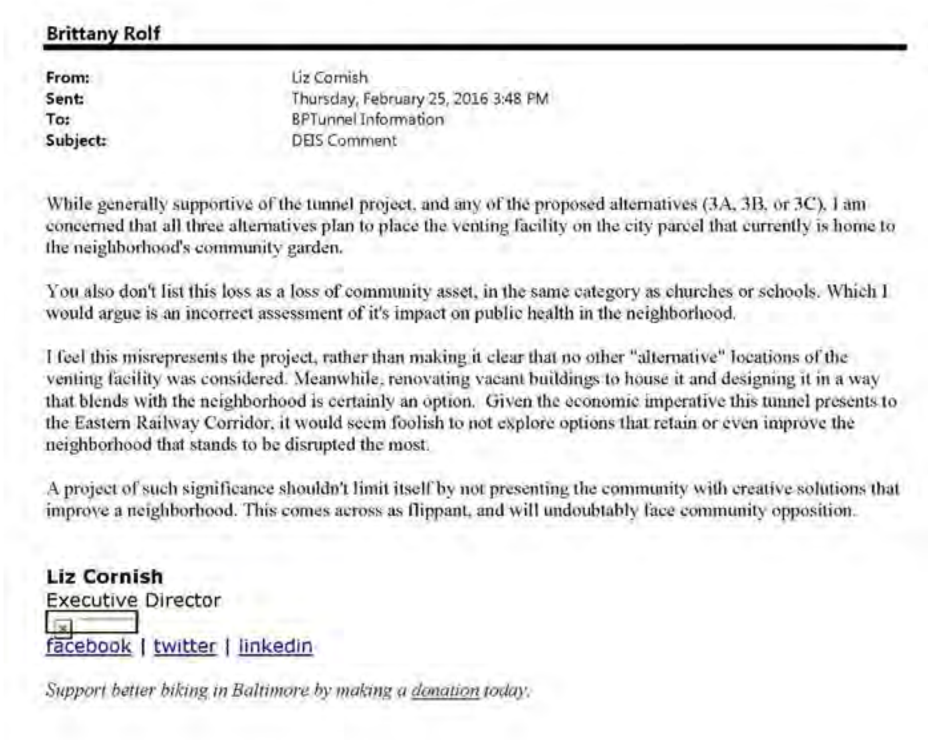
DEIS Comment 21:



Brittany Rolf

From: Liz Cornish
Sent: Thursday, February 25, 2016 3:48 PM
To: BPTunnel Information
Subject: DEIS Comment

1 While generally supportive of the tunnel project, and any of the proposed alternatives (3A, 3B, or 3C), I am concerned that all three alternatives plan to place the venting facility on the city parcel that currently is home to the neighborhood's community garden.

You also don't list this loss as a loss of community asset, in the same category as churches or schools. Which I would argue is an incorrect assessment of it's impact on public health in the neighborhood.

I feel this misrepresents the project, rather than making it clear that no other "alternative" locations of the venting facility was considered. Meanwhile, renovating vacant buildings to house it and designing it in a way that blends with the neighborhood is certainly an option. Given the economic imperative this tunnel presents to the Eastern Railway Corridor, it would seem foolish to not explore options that retain or even improve the neighborhood that stands to be disrupted the most.

A project of such significance shouldn't limit itself by not presenting the community with creative solutions that improve a neighborhood. This comes across as flippant, and will undoubtably face community opposition.

Liz Cornish
Executive Director

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RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

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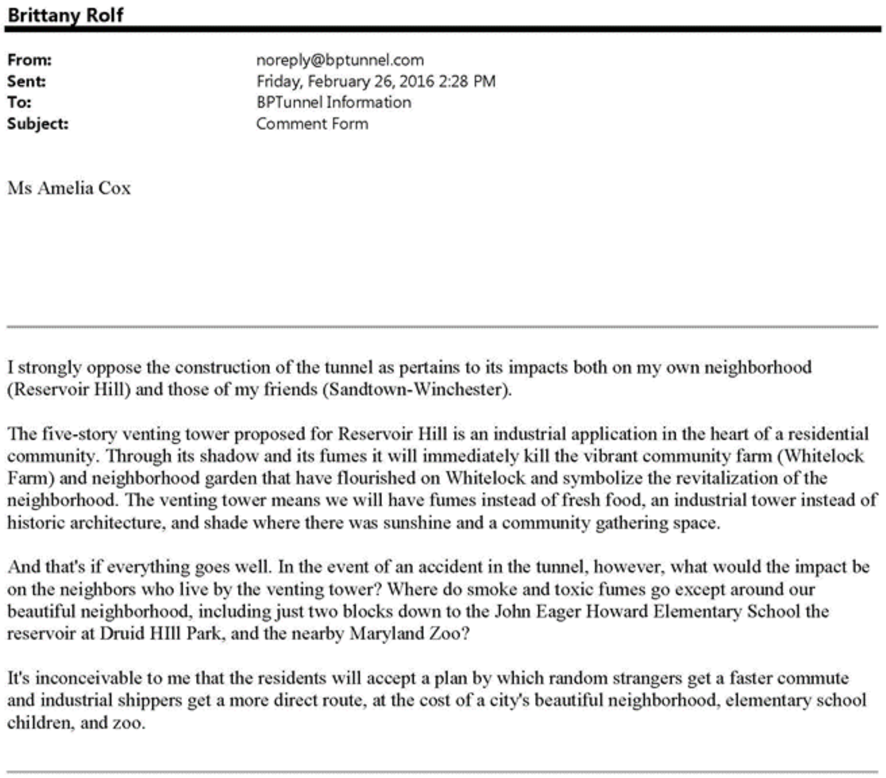
DEIS Comment 22:



Brittany Rolf

From: noreply@bptunnel.com
Sent: Friday, February 26, 2016 2:28 PM
To: BPTunnel Information
Subject: Comment Form

Ms Amelia Cox

1 I strongly oppose the construction of the tunnel as pertains to its impacts both on my own neighborhood (Reservoir Hill) and those of my friends (Sandtown-Winchester).

2 The five-story venting tower proposed for Reservoir Hill is an industrial application in the heart of a residential community. Through its shadow and its fumes it will immediately kill the vibrant community farm (Whitelock Farm) and neighborhood garden that have flourished on Whitelock and symbolize the revitalization of the neighborhood. The venting tower means we will have fumes instead of fresh food, an industrial tower instead of historic architecture, and shade where there was sunshine and a community gathering space.

3 And that's if everything goes well. In the event of an accident in the tunnel, however, what would the impact be on the neighbors who live by the venting tower? Where do smoke and toxic fumes go except around our beautiful neighborhood, including just two blocks down to the John Eager Howard Elementary School the reservoir at Druid HIll Park, and the nearby Maryland Zoo?

It's inconceivable to me that the residents will accept a plan by which random strangers get a faster commute and industrial shippers get a more direct route, at the cost of a city's beautiful neighborhood, elementary school children, and zoo.

RESPONSES

Response to Comment 1:

Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

Response to Comment 2:

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 3:

To minimize risk to the public, FRA requires a range of measures, including emergency response information and safety and security plans. Local first responders receive training

COMMENTS	RESPONSES
	in hazardous materials incidents for specific facilities, including the B&P Tunnel. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA). Emergency access/egress for pedestrians would be accomplished via emergency exits no farther than 2,500 feet apart or cross-passages between tunnels every 800 feet or less, or in some situations, a combination of both. For the Preferred Alternative, three locations would be provided for emergency egress to the surface, working with cross-passages in the tunnels. The emergency egress to ground level would be provided at the south portal Ventilation Facility, via the Intermediate Ventilation Facility, and at the north portal Ventilation Facility. The ventilation facilities would be an essential Life/Safety component of the build alternatives, beyond their function of providing emergency access/egress for the tunnels. The ventilation facilities would include an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, and silencers and dampers. In the unlikely event of a fire, smoke could emerge from the vents, as is the case with any structural fire. The ventilation facilities and fans are built so that smoke emerging from the tunnel would be projected up and away from the community. In the very rare event of a tunnel fire, the path from a tunnel fire to the exhaust louvers is long and circuitous, with many bends that reduce the ability of particles to travel through the fans and louvers. No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns. Regarding concerns for siting the ventilation facility near the elementary school, **Chapter VI** of this FEIS specifically reviewed Air Quality, Water, Soil, and Hazardous Material impacts on Children’s Health. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation facilities would cause, or substantially contribute to a violation of NAAQS, established by the USEPA. No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water.

COMMENTS

RESPONSES

While reducing travel time through the B&P Tunnel is one of several goals of the Project, it is not the reason that the Project was initiated. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

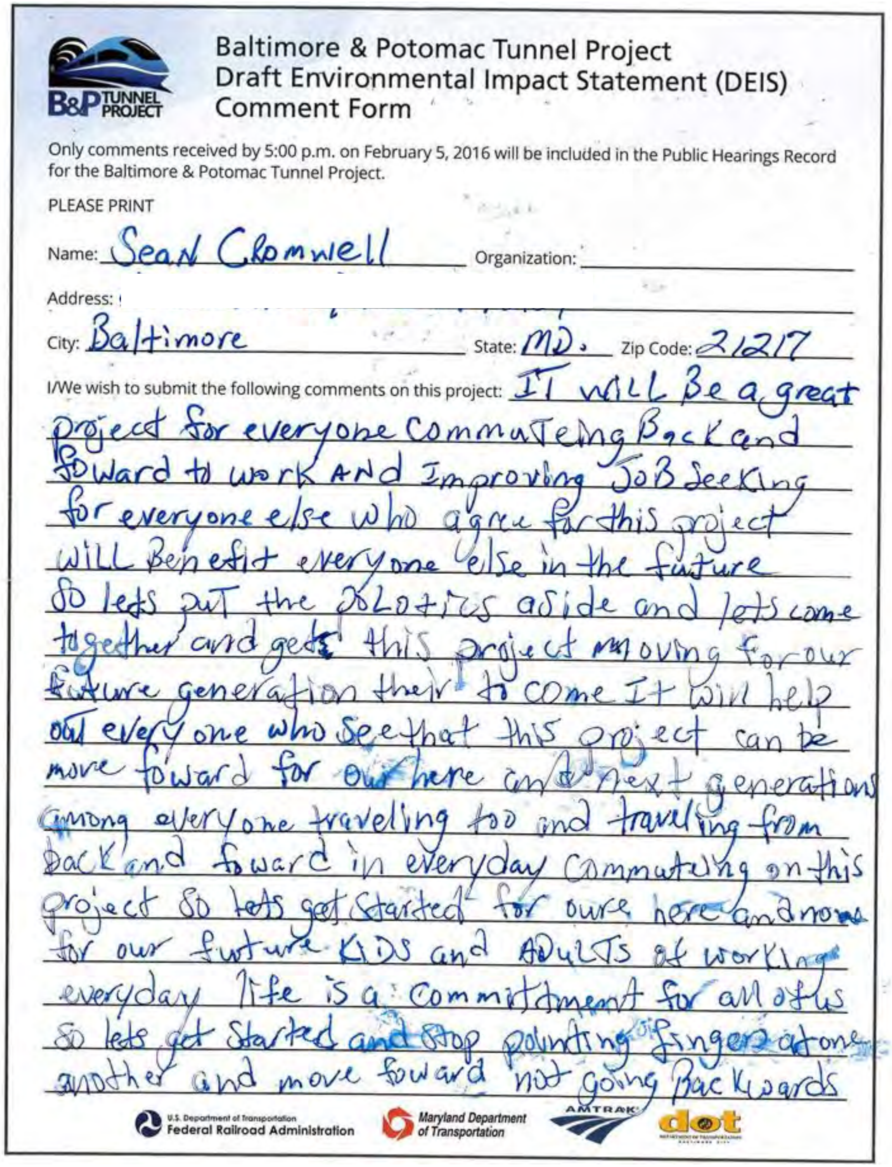
Regarding your comments on industrial shipping, while it is not a primary goal associated with the Project Purpose and Need, the build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes.

COMMENTS

RESPONSES

DEIS Comment 23:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Sean Cromwell
Organization:
Address: [redacted]
City: Baltimore
State: MD.
Zip Code: 21217

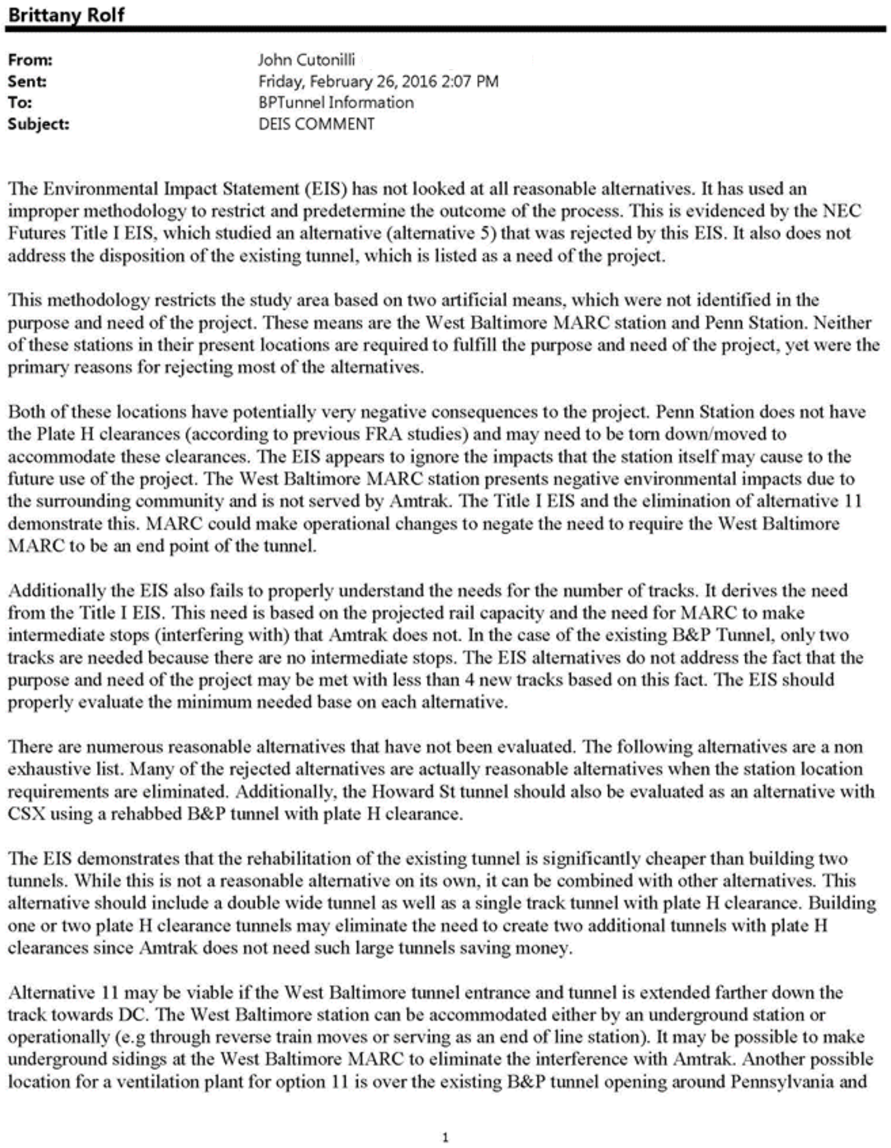
I/We wish to submit the following comments on this project: IT wiLL Be a great project for everyone CommuTeing Back and foward to work AND Improving JoB SeeKing for everyone else who agree for this project wiLL Benefit everyone else in the future so lets put the poLotics aside and lets come together and gets this project moving for our future generation their to come It will help out everyone who see that this project can be move foward for our here and next generations among everyone traveling too and traveling from back and foward in everyday Commuting on this project so lets get started for oure here and nows for our future KIDS and ADULTS of working everyday life is a commitment for all of us so lets get started and stop pointing fingers at one another and move foward not going BacKwards

U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK
dot

Thank you for your comment.

COMMENTS

DEIS Comment 24:



Brittany Rolf

From: John Cutonilli
Sent: Friday, February 26, 2016 2:07 PM
To: BPTunnel Information
Subject: DEIS COMMENT

1 The Environmental Impact Statement (EIS) has not looked at all reasonable alternatives. It has used an improper methodology to restrict and predetermine the outcome of the process. This is evidenced by the NEC Futures Title I EIS, which studied an alternative (alternative 5) that was rejected by this EIS. It also does not address the disposition of the existing tunnel, which is listed as a need of the project.

2 This methodology restricts the study area based on two artificial means, which were not identified in the purpose and need of the project. These means are the West Baltimore MARC station and Penn Station. Neither of these stations in their present locations are required to fulfill the purpose and need of the project, yet were the primary reasons for rejecting most of the alternatives.

Both of these locations have potentially very negative consequences to the project. Penn Station does not have the Plate H clearances (according to previous FRA studies) and may need to be torn down/moved to accommodate these clearances. The EIS appears to ignore the impacts that the station itself may cause to the future use of the project. The West Baltimore MARC station presents negative environmental impacts due to the surrounding community and is not served by Amtrak. The Title I EIS and the elimination of alternative 11 demonstrate this. MARC could make operational changes to negate the need to require the West Baltimore MARC to be an end point of the tunnel.

Additionally the EIS also fails to properly understand the needs for the number of tracks. It derives the need from the Title I EIS. This need is based on the projected rail capacity and the need for MARC to make intermediate stops (interfering with) that Amtrak does not. In the case of the existing B&P Tunnel, only two tracks are needed because there are no intermediate stops. The EIS alternatives do not address the fact that the purpose and need of the project may be met with less than 4 new tracks based on this fact. The EIS should properly evaluate the minimum needed base on each alternative.

3 There are numerous reasonable alternatives that have not been evaluated. The following alternatives are a non exhaustive list. Many of the rejected alternatives are actually reasonable alternatives when the station location requirements are eliminated. Additionally, the Howard St tunnel should also be evaluated as an alternative with CSX using a rehabbed B&P tunnel with plate H clearance.

The EIS demonstrates that the rehabilitation of the existing tunnel is significantly cheaper than building two tunnels. While this is not a reasonable alternative on its own, it can be combined with other alternatives. This alternative should include a double wide tunnel as well as a single track tunnel with plate H clearance. Building one or two plate H clearance tunnels may eliminate the need to create two additional tunnels with plate H clearances since Amtrak does not need such large tunnels saving money.

Alternative 11 may be viable if the West Baltimore tunnel entrance and tunnel is extended farther down the track towards DC. The West Baltimore station can be accommodated either by an underground station or operationally (e.g through reverse train moves or serving as an end of line station). It may be possible to make underground sidings at the West Baltimore MARC to eliminate the interference with Amtrak. Another possible location for a ventilation plant for option 11 is over the existing B&P tunnel opening around Pennsylvania and

1

RESPONSES

Response to Comment 1:

As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

The Project is proposed in order to address the deficiencies of the existing tunnel. Alternative 5 does not address deficiencies of the tunnel, and is therefore not a feasible alternative. For more information regarding the Project Purpose and Need, as well as the Alternatives Development process, please refer to **Chapters II and III** of this FEIS.

The disposition of the existing tunnel is explored in **Chapter II**. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

Response to Comment 2:

The purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, which include eliminating impediments to existing and projected operations along the NEC. The alternatives considered were developed to complement existing operations at the existing Penn Station.

COMMENTS

Wilson Streets (with a short tunnel). This location would be able to serve Alternative 11, the rehabbed B&P tunnel as well as the existing Metro. This alternative should also be evaluated with less than 4 new tracks.

John Cutonilli

2

RESPONSES

Using existing infrastructure was a necessary condition for an Alternative to be considered feasible and/or reasonable. Utilizing Baltimore Penn Station was one such condition. Utilizing the existing West Baltimore MARC station, however, was not a condition, and the existing station will be replaced.

Amtrak is in the early planning stages of developing a master plan for the future needs at Baltimore Penn Station (Amtrak, 2015). The plan will outline a series of incremental and phased improvements to the station facility and select land assets to guide the station's future development. The master plan will build off three studies: The Operations and Facilities Study, which will assess long-term operational and facility requirements for Baltimore Penn Station to meet growing capacity demands; the State of Good Repair Study; and the Commercial Development Study. Early coordination between the Project Team and Baltimore Penn Station representatives indicated that neither project would impact the other. Planned high level platforms at Baltimore Penn Station would not have any material effect on the alternatives considered for the Project.

Regarding the minimum appropriate number of tracks, consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

Response to Comment 3:
The constraints and requirements used in the evaluation of Alternatives were created to ensure that the Alternatives that advanced to further study would be both feasible and reasonable to implement. The continued use of assets such as Baltimore Penn Station and the Gwynns Falls Bridge ensure that additional funds are not spent rebuilding functional infrastructure and that communities and the local economy are not disrupted with unnecessary construction.

As described in **Chapter III** of the FEIS, Alternative 2: Reconstruct/Modernize Existing Tunnel was eliminated from further consideration for specific engineering and operational reasons. Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including:

- Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction;

COMMENTS	RESPONSES

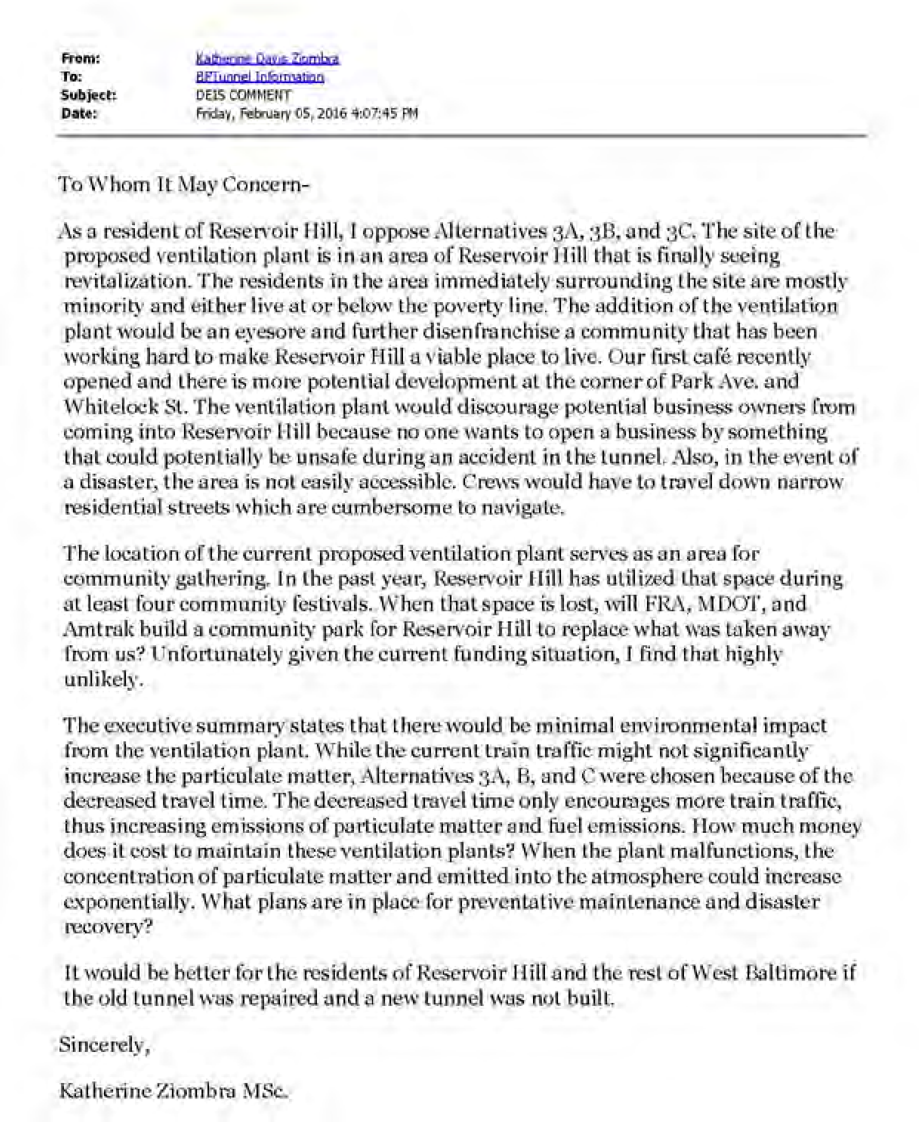
- No parking along Wilson Street or Winchester Street during construction;
- Limitations for residential and commercial access along Wilson Street and Winchester Street during construction;
- Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park;
- Substantial residential property impacts; and
- eSevere impacts to North Avenue, central Light Rail line, and CSX Main Line operations due to open cut construction through North Avenue, light rail, and CSX track beds.

Additionally, for construction to advance, at minimum, one track would have to be removed from service. It would be impossible to provide adequate NEC service using a single track, particularly as ridership and train frequency increase over time.

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 25:



From: Katherine Davis Ziombra
To: BPTunnel Information
Subject: DEIS COMMENT
Date: Friday, February 05, 2016 4:07:45 PM

To Whom It May Concern-

As a resident of Reservoir Hill, I oppose Alternatives 3A, 3B, and 3C. The site of the
proposed ventilation plant is in an area of Reservoir Hill that is finally seeing
revitalization. The residents in the area immediately surrounding the site are mostly
minority and either live at or below the poverty line. The addition of the ventilation
plant would be an eyesore and further disenfranchise a community that has been
1 working hard to make Reservoir Hill a viable place to live. Our first café recently
opened and there is more potential development at the corner of Park Ave. and
Whitelock St. The ventilation plant would discourage potential business owners from
coming into Reservoir Hill because no one wants to open a business by something
that could potentially be unsafe during an accident in the tunnel. Also, in the event of
2 a disaster, the area is not easily accessible. Crews would have to travel down narrow
residential streets which are cumbersome to navigate.

The location of the current proposed ventilation plant serves as an area for
community gathering. In the past year, Reservoir Hill has utilized that space during
1 at least four community festivals. When that space is lost, will FRA, MDOT, and
Amtrak build a community park for Reservoir Hill to replace what was taken away
from us? Unfortunately given the current funding situation, I find that highly
unlikely.

The executive summary states that there would be minimal environmental impact
from the ventilation plant. While the current train traffic might not significantly
increase the particulate matter, Alternatives 3A, B, and C were chosen because of the
3 decreased travel time. The decreased travel time only encourages more train traffic,
thus increasing emissions of particulate matter and fuel emissions. How much money
does it cost to maintain these ventilation plants? When the plant malfunctions, the
concentration of particulate matter and emitted into the atmosphere could increase
exponentially. What plans are in place for preventative maintenance and disaster
recovery?

It would be better for the residents of Reservoir Hill and the rest of West Baltimore if
4 the old tunnel was repaired and a new tunnel was not built.

Sincerely,

Katherine Ziombra MSc.

RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

Response to Comment 2:
The economic market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

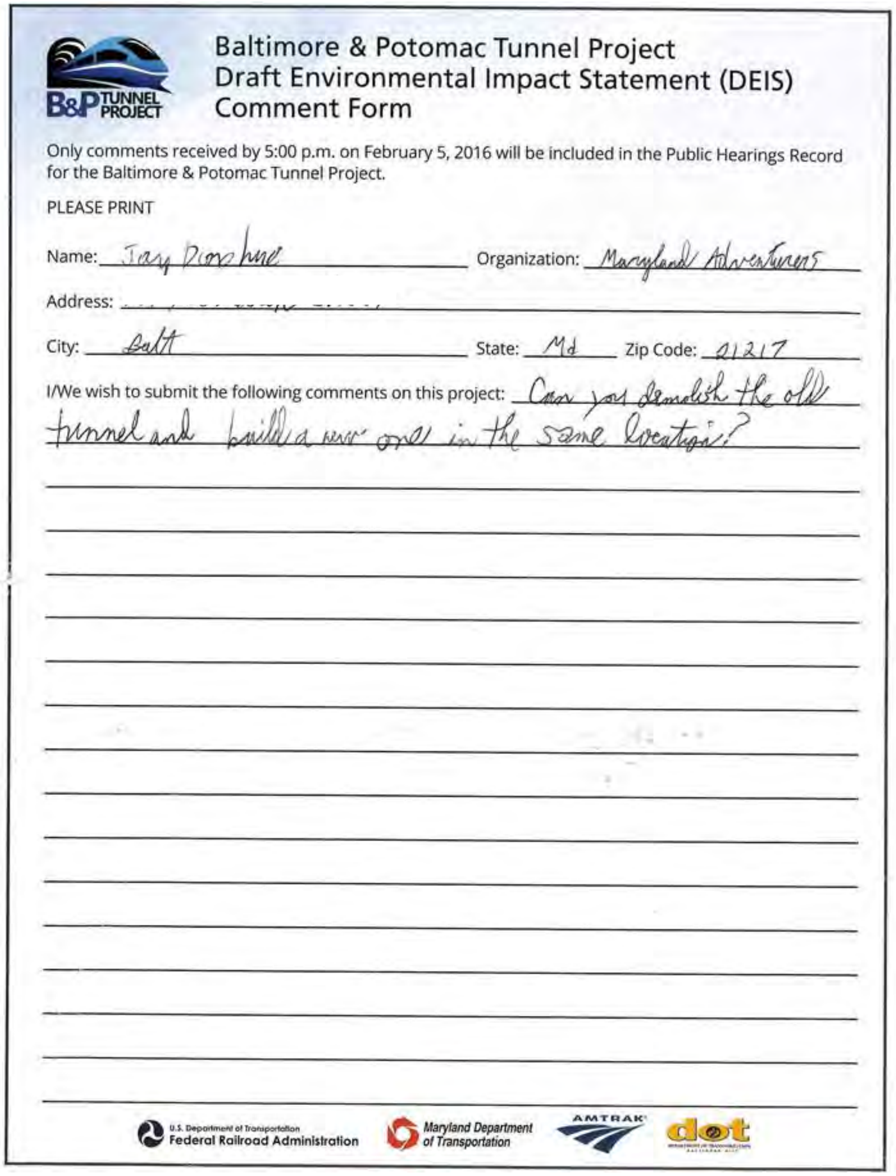
To minimize risk to the public, FRA requires a range of measures, including emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

Response to Comment 3:
Regarding environmental impacts from the ventilation facilities, the emissions associated with the proposed facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

COMMENTS	RESPONSES
	The cost of maintaining the systems are factored into the overall life cycle costs of the Project. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA). The ventilation facilities would be an essential Life/Safety component of the build alternatives, beyond their function of providing emergency access/egress for the tunnels. The ventilation facilities would include an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, and silencers and dampers. In the unlikely event of a fire, smoke could emerge from the vents, as is the case with any structural fire. The ventilation facilities and fans are built so that smoke emerging from the tunnel would be projected up and away from the community. In the very rare event of a tunnel fire, the path from a tunnel fire to the exhaust louvers is long and circuitous, with many bends that reduce the ability of particles to travel through the fans and louvers. **Response to Comment 4:** As described in **Chapter III** of the FEIS, Alternative 2: Reconstruct/Modernize Existing Tunnel was eliminated from further consideration for specific engineering and operational reasons. Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including: • Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction; • No parking along Wilson Street or Winchester Street during construction; • Limitations for residential and commercial access along Wilson Street and Winchester Street during construction; • Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park; • Substantial residential property impacts; and • Severe impacts to North Avenue, central Light Rail line, and CSX Main Line operations due to open cut construction through North Avenue, light rail, and CSX track beds. Additionally, for construction to advance, at minimum, one track would have to be removed from service. It would be impossible to provide adequate NEC service using a single track, particularly as ridership and train frequency increase over time.

COMMENTS

DEIS Comment 26:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Jay Donohue Organization: Maryland Adventures

Address: [redacted]

City: Balt State: Md Zip Code: 21217

1 I/We wish to submit the following comments on this project: Can you demolish the old tunnel and build a new one in the same location?

U.S. Department of Transportation Federal Railroad Administration | Maryland Department of Transportation | AMTRAK | dot

RESPONSES

Response to Comment 1:
As described in **Chapter III** of the FEIS, Alternative 2: Reconstruct/Modernize Existing Tunnel was eliminated from further consideration for specific engineering and operational reasons. Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including:

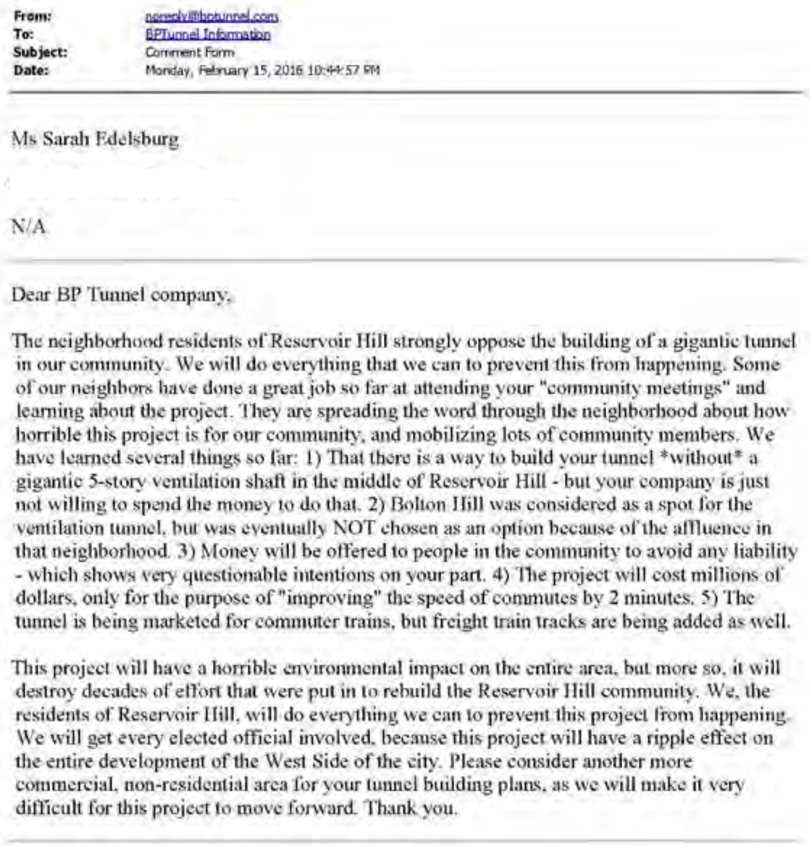
- Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction;
- No parking along Wilson Street or Winchester Street during construction;
- Limitations for residential and commercial access along Wilson Street and Winchester Street during construction;
- Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park;
- Substantial residential property impacts; and
- Severe impacts to North Avenue, central Light Rail line, and CSX Main Line operations due to open cut construction through North Avenue, light rail, and CSX track beds.

Additionally, for construction to advance, at minimum, one track would have to be removed from service. It would be impossible to provide adequate NEC service using a single track, particularly as ridership and train frequency increase over time.

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 27:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Monday, February 15, 2016 10:44:57 PM

Ms Sarah Edelsburg

N/A

Dear BP Tunnel company,

The neighborhood residents of Reservoir Hill strongly oppose the building of a gigantic tunnel
in our community. We will do everything that we can to prevent this from happening. Some
of our neighbors have done a great job so far at attending your "community meetings" and
learning about the project. They are spreading the word through the neighborhood about how
1 horrible this project is for our community, and mobilizing lots of community members. We
have learned several things so far: 1) That there is a way to build your tunnel *without* a
gigantic 5-story ventilation shaft in the middle of Reservoir Hill - but your company is just
2 not willing to spend the money to do that. 2) Bolton Hill was considered as a spot for the
ventilation tunnel, but was eventually NOT chosen as an option because of the affluence in
3 that neighborhood. 3) Money will be offered to people in the community to avoid any liability
4 - which shows very questionable intentions on your part. 4) The project will cost millions of
5 dollars, only for the purpose of "improving" the speed of commutes by 2 minutes. 5) The
tunnel is being marketed for commuter trains, but freight train tracks are being added as well.

This project will have a horrible environmental impact on the entire area, but more so, it will
destroy decades of effort that were put in to rebuild the Reservoir Hill community. We, the
6 residents of Reservoir Hill, will do everything we can to prevent this project from happening.
We will get every elected official involved, because this project will have a ripple effect on
7 the entire development of the West Side of the city. Please consider another more
commercial, non-residential area for your tunnel building plans, as we will make it very
difficult for this project to move forward. Thank you.

RESPONSES

Response to Comment 1:
As described in **Chapter III** of the FEIS, the build alternatives would require three ventilation facilities in order to meet current safety industry standards (NFPA 130) for projected NEC FUTURE train demand headway, and to ensure proper ventilation of the proposed tunnels. The purpose of the ventilation facility is to pull fresh air into the tunnel and ventilate the tunnel air to the outside. One ventilation facility will be located at the south portal, and another will be located 300-600 feet from the north portal. A third ventilation facility would be located at street level, connected to the bored portion of the tunnels by a vertical shaft and connecting tunnel (plenum), splitting the proposed tunnel into two unequal lengths. The Intermediate Ventilation Facility would consist of a building, approximately 100 feet by 200 feet in plan with a maximum height of 60 feet.

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 2:
An Area of Consideration for the Intermediate Ventilation Facility of each build alternative was identified as part of the preliminary engineering, based on considerations previously described. As described in **Chapter III**, the three overlapping Areas of Consideration (corresponding with Alternatives 3A, 3B, and 3C) were all located in the Reservoir Hill neighborhood.

Response to Comment 3:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

The Project would provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. Payment to those not relocated would be offered in the event that structural damage to houses or other buildings is determined to have been

COMMENTS	RESPONSES

caused by the Project construction activities. The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

Response to Comment 4:
While reducing travel time through the B&P Tunnel is one of several goals of the Project, it is not the reason that the Project was initiated. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

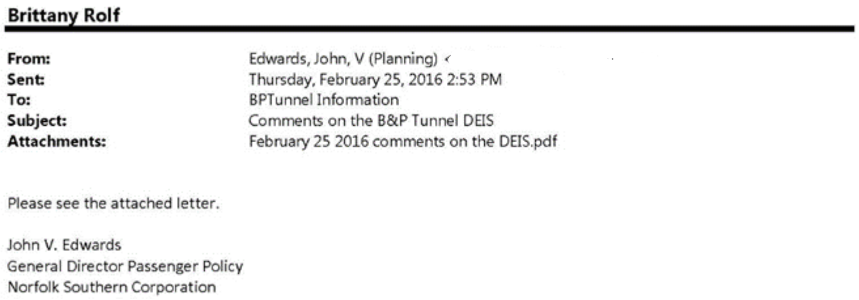
Response to Comment 5:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

COMMENTS	RESPONSES
	Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes. **Response to Comment 6:** Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility. For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**. **Response to Comment 7:** The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS

RESPONSES

DEIS Comment 28:



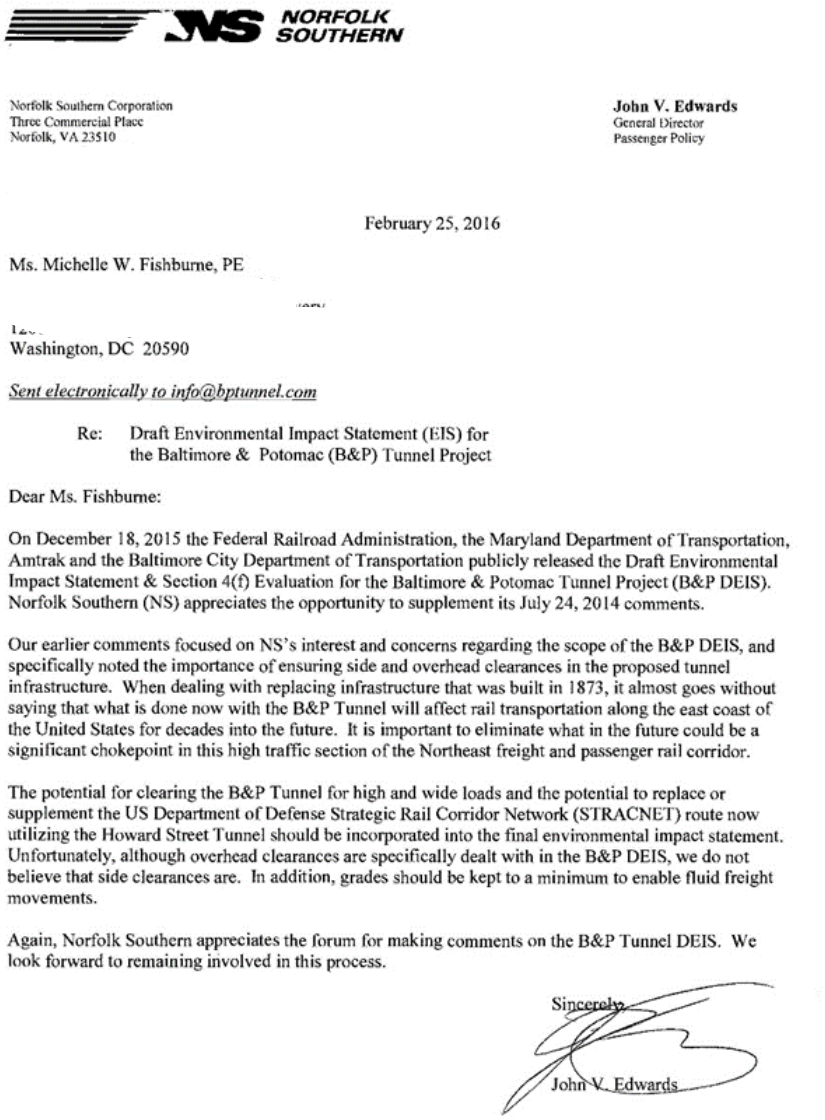
Brittany Rolf

From:	Edwards, John, V (Planning) <
Sent:	Thursday, February 25, 2016 2:53 PM
To:	BPTunnel Information
Subject:	Comments on the B&P Tunnel DEIS
Attachments:	February 25 2016 comments on the DEIS.pdf

Please see the attached letter.

John V. Edwards
General Director Passenger Policy
Norfolk Southern Corporation

COMMENTS



NORFOLK SOUTHERN

Norfolk Southern Corporation
Three Commercial Place
Norfolk, VA 23510

John V. Edwards
General Director
Passenger Policy

February 25, 2016

Ms. Michelle W. Fishburne, PE

Washington, DC 20590

Sent electronically to info@bptunnel.com

Re: Draft Environmental Impact Statement (EIS) for the Baltimore & Potomac (B&P) Tunnel Project

Dear Ms. Fishburne:

On December 18, 2015 the Federal Railroad Administration, the Maryland Department of Transportation, Amtrak and the Baltimore City Department of Transportation publicly released the Draft Environmental Impact Statement & Section 4(f) Evaluation for the Baltimore & Potomac Tunnel Project (B&P DEIS). Norfolk Southern (NS) appreciates the opportunity to supplement its July 24, 2014 comments.

Our earlier comments focused on NS's interest and concerns regarding the scope of the B&P DEIS, and specifically noted the importance of ensuring side and overhead clearances in the proposed tunnel infrastructure. When dealing with replacing infrastructure that was built in 1873, it almost goes without saying that what is done now with the B&P Tunnel will affect rail transportation along the east coast of the United States for decades into the future. It is important to eliminate what in the future could be a significant chokepoint in this high traffic section of the Northeast freight and passenger rail corridor.

1 The potential for clearing the B&P Tunnel for high and wide loads and the potential to replace or supplement the US Department of Defense Strategic Rail Corridor Network (STRACNET) route now utilizing the Howard Street Tunnel should be incorporated into the final environmental impact statement. Unfortunately, although overhead clearances are specifically dealt with in the B&P DEIS, we do not believe that side clearances are. In addition, grades should be kept to a minimum to enable fluid freight movements.

Again, Norfolk Southern appreciates the forum for making comments on the B&P Tunnel DEIS. We look forward to remaining involved in this process.

Sincerely,

John V. Edwards

RESPONSES

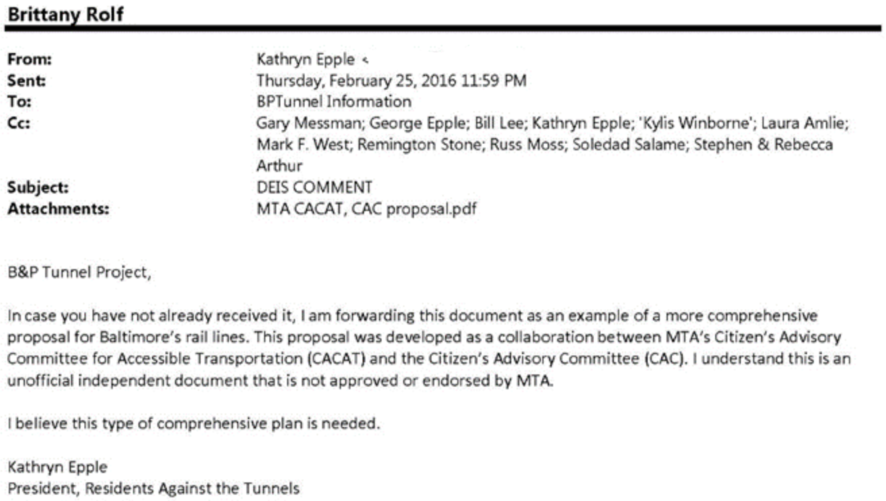
Response to Comment 1:
Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the build alternatives propose a total of four tracks which will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040.

The build alternative tunnels would have clearances to accommodate double stack container freight cars, known as AAR Plate H. The operating envelope for Plate H clearance is generally, 10 feet 8 inches wide by 20 feet 3 inches tall.

The internal diameter of the tunnel is nominally 30 ft with an internal configuration to accommodate AAR Plate H and Plate K equipment. The existing B&P Tunnel is not on the current Strategic Rail Corridor Network (STRACNET). Neither the Federal Railroad Administration nor the Department of Defense (DOD) have identified the need to place the B&P Tunnel or its replacement on the STRACNET; therefore, the replacement tunnel(s) have not been designed to accommodate the DOD Clearance Profile for STRACNET. Also, please note that there are many other restrictions north and south of the proposed tunnel preventing achieving STRACNET clearances along the length of the NEC. For some of these restrictions, no feasible solution has yet been identified.

COMMENTS

DEIS Comment 29:



Brittany Rolf

From: Kathryn Epple <
Sent: Thursday, February 25, 2016 11:59 PM
To: BPTunnel Information
Cc: Gary Messman; George Epple; Bill Lee; Kathryn Epple; 'Kylis Winborne'; Laura Amlie; Mark F. West; Remington Stone; Russ Moss; Soledad Salame; Stephen & Rebecca Arthur
Subject: DEIS COMMENT
Attachments: MTA CACAT, CAC proposal.pdf

B&P Tunnel Project,

1 In case you have not already received it, I am forwarding this document as an example of a more comprehensive proposal for Baltimore's rail lines. This proposal was developed as a collaboration between MTA's Citizen's Advisory Committee for Accessible Transportation (CACAT) and the Citizen's Advisory Committee (CAC). I understand this is an unofficial independent document that is not approved or endorsed by MTA.

I believe this type of comprehensive plan is needed.

Kathryn Epple
President, Residents Against the Tunnels

RESPONSES

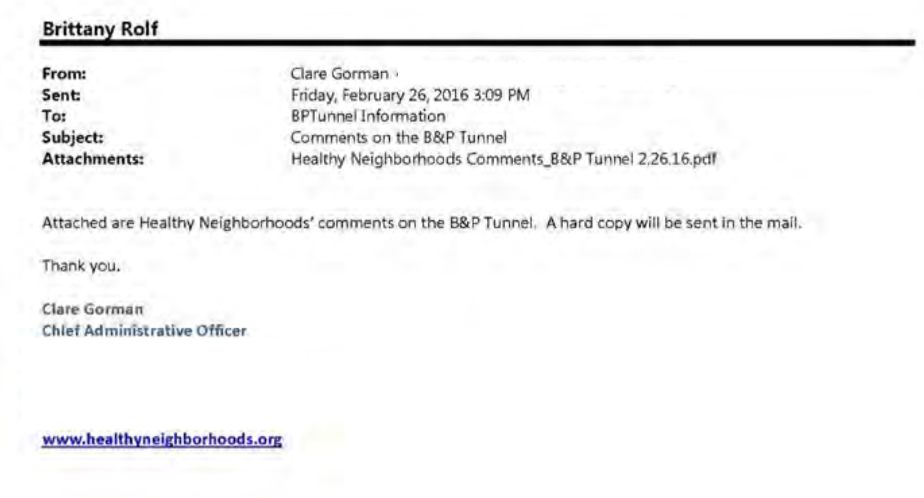
Response to Comment 1:
The report provided, *A Proposal to Unravel Baltimore's Tangled Rail Lines*, argues for a comprehensive system approach to rail planning in Baltimore and the mid-Atlantic region. It describes a list of projects and the order in which they should be completed. The report takes into consideration local, state, and regional transportation routes, and recommends new construction at a number of locations in order to relieve congestion and create opportunities for expanding rail service in the future.

While recommendations in the report focus on resolving issues at a regional level, they would not address or resolve the specific needs of the B&P Tunnel; therefore, the improvements suggested in the report would be beyond the purview of the Project. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life. It is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. For additional information regarding the purpose and need of the Project, please see **Chapter II** of this FEIS.

To review the September 2015 report in its entirety, please refer to **DEIS Comment #11**.

COMMENTS | **RESPONSES**

DEIS Comment 30:



Brittany Rolf

From: Clare Gorman
Sent: Friday, February 26, 2016 3:09 PM
To: BPTunnel Information
Subject: Comments on the B&P Tunnel
Attachments: Healthy Neighborhoods Comments_B&P Tunnel 2.26.16.pdf

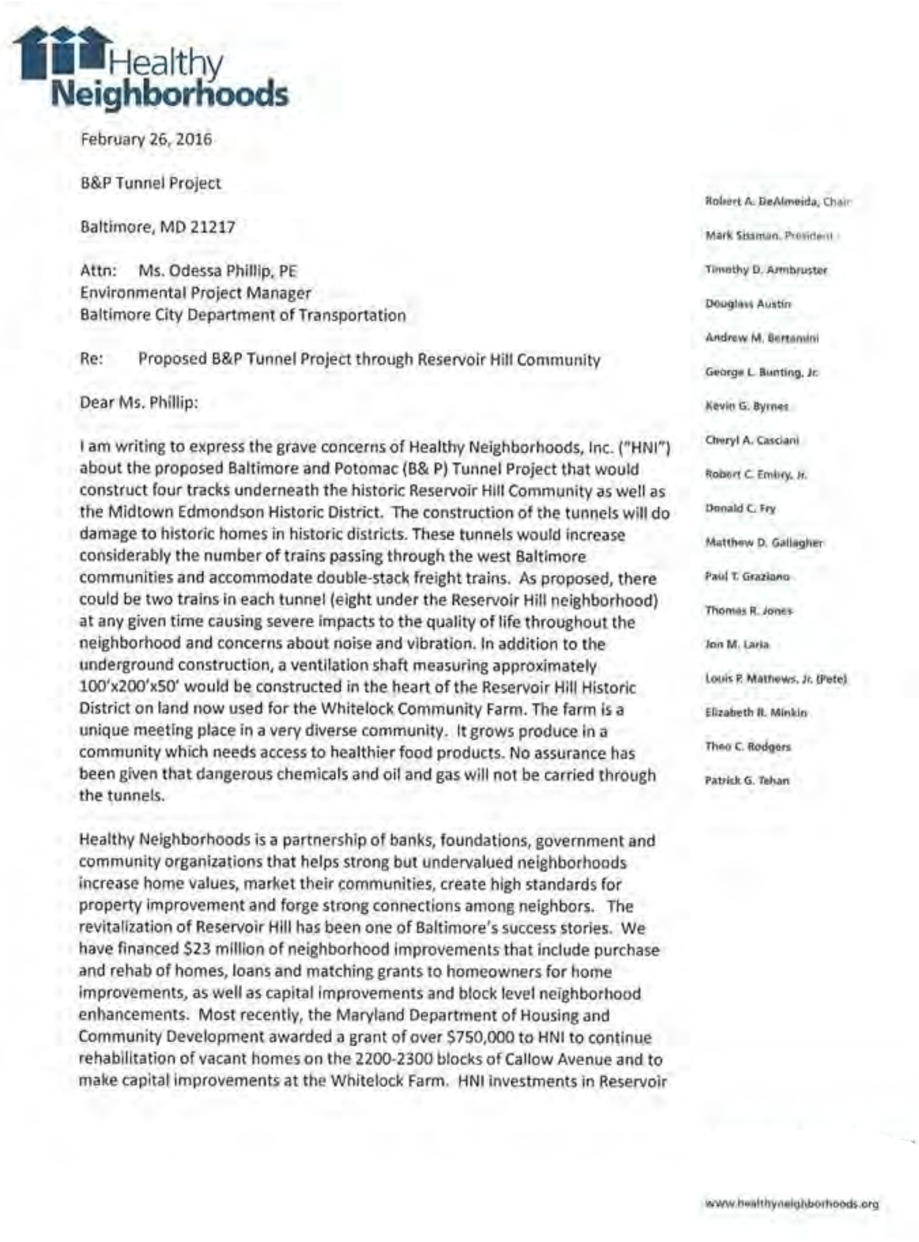
Attached are Healthy Neighborhoods' comments on the B&P Tunnel. A hard copy will be sent in the mail.

Thank you.

Clare Gorman
Chief Administrative Officer

www.healthyneighborhoods.org

COMMENTS



Healthy Neighborhoods

February 26, 2016

B&P Tunnel Project

Baltimore, MD 21217

Attn: Ms. Odessa Phillip, PE
Environmental Project Manager
Baltimore City Department of Transportation

Re: Proposed B&P Tunnel Project through Reservoir Hill Community

Dear Ms. Phillip:

I am writing to express the grave concerns of Healthy Neighborhoods, Inc. ("HNI")
about the proposed Baltimore and Potomac (B& P) Tunnel Project that would
1 construct four tracks underneath the historic Reservoir Hill Community as well as
the Midtown Edmondson Historic District. The construction of the tunnels will do
damage to historic homes in historic districts. These tunnels would increase
considerably the number of trains passing through the west Baltimore
communities and accommodate double-stack freight trains. As proposed, there
2 could be two trains in each tunnel (eight under the Reservoir Hill neighborhood)
at any given time causing severe impacts to the quality of life throughout the
3 neighborhood and concerns about noise and vibration. In addition to the
underground construction, a ventilation shaft measuring approximately
4 100'x200'x50' would be constructed in the heart of the Reservoir Hill Historic
District on land now used for the Whitelock Community Farm. The farm is a
unique meeting place in a very diverse community. It grows produce in a
5 community which needs access to healthier food products. No assurance has
been given that dangerous chemicals and oil and gas will not be carried through
the tunnels.

Healthy Neighborhoods is a partnership of banks, foundations, government and community organizations that helps strong but undervalued neighborhoods increase home values, market their communities, create high standards for property improvement and forge strong connections among neighbors. The revitalization of Reservoir Hill has been one of Baltimore's success stories. We have financed $23 million of neighborhood improvements that include purchase and rehab of homes, loans and matching grants to homeowners for home improvements, as well as capital improvements and block level neighborhood enhancements. Most recently, the Maryland Department of Housing and Community Development awarded a grant of over $750,000 to HNI to continue rehabilitation of vacant homes on the 2200-2300 blocks of Callow Avenue and to make capital improvements at the Whitelock Farm. HNI investments in Reservoir

Robert A. DeAlmeida, Chair
Mark Sissman, President
Timothy D. Armbruster
Douglass Austin
Andrew M. Bertamini
George L. Bunting, Jr.
Kevin G. Byrnes
Cheryl A. Casciani
Robert C. Embry, Jr.
Donald C. Fry
Matthew D. Gallagher
Paul T. Graziano
Thomas R. Jones
Jon M. Laria
Louis P. Mathews, Jr. (Pete)
Elizabeth R. Minkin
Theo C. Rodgers
Patrick G. Tehan

RESPONSES

Response to Comment 1:
The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**.

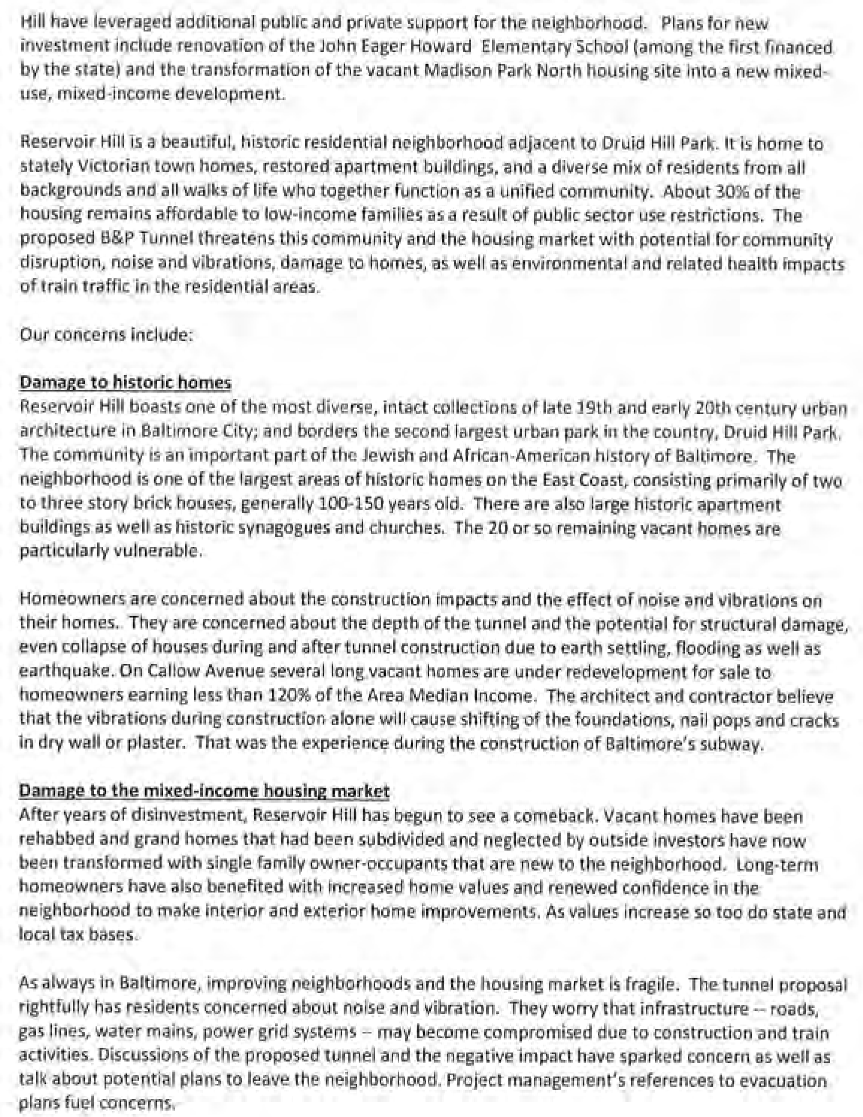
Response to Comment 2:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes.

Amtrak design practices require new NEC infrastructure meet current standards, including Plate H (double stack) clearances. However, the new tunnel could not be used by double stack freight trains unless certain factors are met. These factors include:

- Substantial improvements, such as extensive additional vertical clearance improvements north and south of the B&P Tunnel to other NEC infrastructure; these improvements are not being designed as part of the B&P Project;
- Federal, state, local and regional support for aforementioned improvements including funding and policy;

COMMENTS



Hill have leveraged additional public and private support for the neighborhood. Plans for new investment include renovation of the John Eager Howard Elementary School (among the first financed by the state) and the transformation of the vacant Madison Park North housing site into a new mixed-use, mixed-income development.

6 Reservoir Hill is a beautiful, historic residential neighborhood adjacent to Druid Hill Park. It is home to stately Victorian town homes, restored apartment buildings, and a diverse mix of residents from all backgrounds and all walks of life who together function as a unified community. About 30% of the housing remains affordable to low-income families as a result of public sector use restrictions. The proposed B&P Tunnel threatens this community and the housing market with potential for community disruption, noise and vibrations, damage to homes, as well as environmental and related health impacts of train traffic in the residential areas.

Our concerns include:

Damage to historic homes

7 Reservoir Hill boasts one of the most diverse, intact collections of late 19th and early 20th century urban architecture in Baltimore City; and borders the second largest urban park in the country, Druid Hill Park. The community is an important part of the Jewish and African-American history of Baltimore. The neighborhood is one of the largest areas of historic homes on the East Coast, consisting primarily of two to three story brick houses, generally 100-150 years old. There are also large historic apartment buildings as well as historic synagogues and churches. The 20 or so remaining vacant homes are particularly vulnerable.

Homeowners are concerned about the construction impacts and the effect of noise and vibrations on their homes. They are concerned about the depth of the tunnel and the potential for structural damage, even collapse of houses during and after tunnel construction due to earth settling, flooding as well as earthquake. On Callow Avenue several long vacant homes are under redevelopment for sale to homeowners earning less than 120% of the Area Median Income. The architect and contractor believe that the vibrations during construction alone will cause shifting of the foundations, nail pops and cracks in dry wall or plaster. That was the experience during the construction of Baltimore's subway.

Damage to the mixed-income housing market

After years of disinvestment, Reservoir Hill has begun to see a comeback. Vacant homes have been rehabbed and grand homes that had been subdivided and neglected by outside investors have now been transformed with single family owner-occupants that are new to the neighborhood. Long-term homeowners have also benefited with increased home values and renewed confidence in the neighborhood to make interior and exterior home improvements. As values increase so too do state and local tax bases.

8 As always in Baltimore, improving neighborhoods and the housing market is fragile. The tunnel proposal rightfully has residents concerned about noise and vibration. They worry that infrastructure -- roads, gas lines, water mains, power grid systems -- may become compromised due to construction and train activities. Discussions of the proposed tunnel and the negative impact have sparked concern as well as talk about potential plans to leave the neighborhood. Project management's references to evacuation plans fuel concerns.

RESPONSES

- Increasing the bridge and catenary clearance on the NEC where double stack/high dimension trains are to travel;
- Construction of new or modified Union tunnel to Plate H/K (double stack) clearances; without a high dimension Union tunnel, double stack freight service using the B&P Tunnel is not possible;
- NS currently favors the Harrisburg-Perryville route for intermodal service;
- Freight schedules limited to off peak/night time periods which affects the scheduling flexibility and transit time for high priority (Intermodal) shipments for which time is absolutely critical; and
- Construction of track connection/s between the CSX and the NEC if CSX chooses to use the NEC.

In the short-term, there is no indication of any significant increase in freight movements through the B&P Tunnel.

Response to Comment 3:

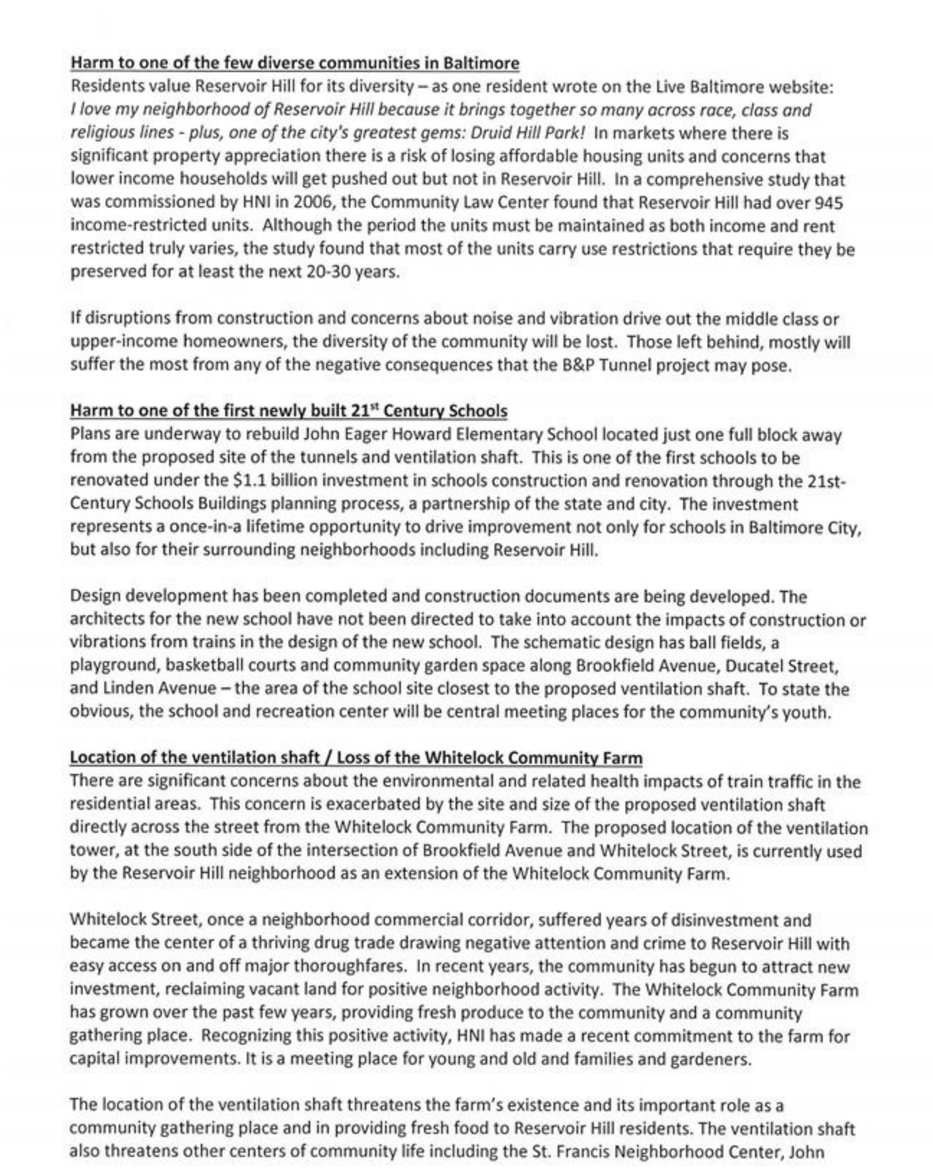
The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM

COMMENTS



Harm to one of the few diverse communities in Baltimore

Residents value Reservoir Hill for its diversity – as one resident wrote on the Live Baltimore website: *I love my neighborhood of Reservoir Hill because it brings together so many across race, class and religious lines - plus, one of the city's greatest gems: Druid Hill Park!* In markets where there is significant property appreciation there is a risk of losing affordable housing units and concerns that lower income households will get pushed out but not in Reservoir Hill. In a comprehensive study that was commissioned by HNI in 2006, the Community Law Center found that Reservoir Hill had over 945 income-restricted units. Although the period the units must be maintained as both income and rent restricted truly varies, the study found that most of the units carry use restrictions that require they be preserved for at least the next 20-30 years.

9 If disruptions from construction and concerns about noise and vibration drive out the middle class or upper-income homeowners, the diversity of the community will be lost. Those left behind, mostly will suffer the most from any of the negative consequences that the B&P Tunnel project may pose.

Harm to one of the first newly built 21st Century Schools

Plans are underway to rebuild John Eager Howard Elementary School located just one full block away from the proposed site of the tunnels and ventilation shaft. This is one of the first schools to be renovated under the $1.1 billion investment in schools construction and renovation through the 21st-Century Schools Buildings planning process, a partnership of the state and city. The investment represents a once-in-a lifetime opportunity to drive improvement not only for schools in Baltimore City, but also for their surrounding neighborhoods including Reservoir Hill.

Design development has been completed and construction documents are being developed. The architects for the new school have not been directed to take into account the impacts of construction or vibrations from trains in the design of the new school. The schematic design has ball fields, a playground, basketball courts and community garden space along Brookfield Avenue, Ducatel Street, and Linden Avenue – the area of the school site closest to the proposed ventilation shaft. To state the obvious, the school and recreation center will be central meeting places for the community's youth.

Location of the ventilation shaft / Loss of the Whitelock Community Farm

There are significant concerns about the environmental and related health impacts of train traffic in the residential areas. This concern is exacerbated by the site and size of the proposed ventilation shaft directly across the street from the Whitelock Community Farm. The proposed location of the ventilation tower, at the south side of the intersection of Brookfield Avenue and Whitelock Street, is currently used by the Reservoir Hill neighborhood as an extension of the Whitelock Community Farm. 10

Whitelock Street, once a neighborhood commercial corridor, suffered years of disinvestment and became the center of a thriving drug trade drawing negative attention and crime to Reservoir Hill with easy access on and off major thoroughfares. In recent years, the community has begun to attract new investment, reclaiming vacant land for positive neighborhood activity. The Whitelock Community Farm has grown over the past few years, providing fresh produce to the community and a community gathering place. Recognizing this positive activity, HNI has made a recent commitment to the farm for capital improvements. It is a meeting place for young and old and families and gardeners.

The location of the ventilation shaft threatens the farm's existence and its important role as a community gathering place and in providing fresh food to Reservoir Hill residents. The ventilation shaft also threatens other centers of community life including the St. Francis Neighborhood Center, John

RESPONSES

would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

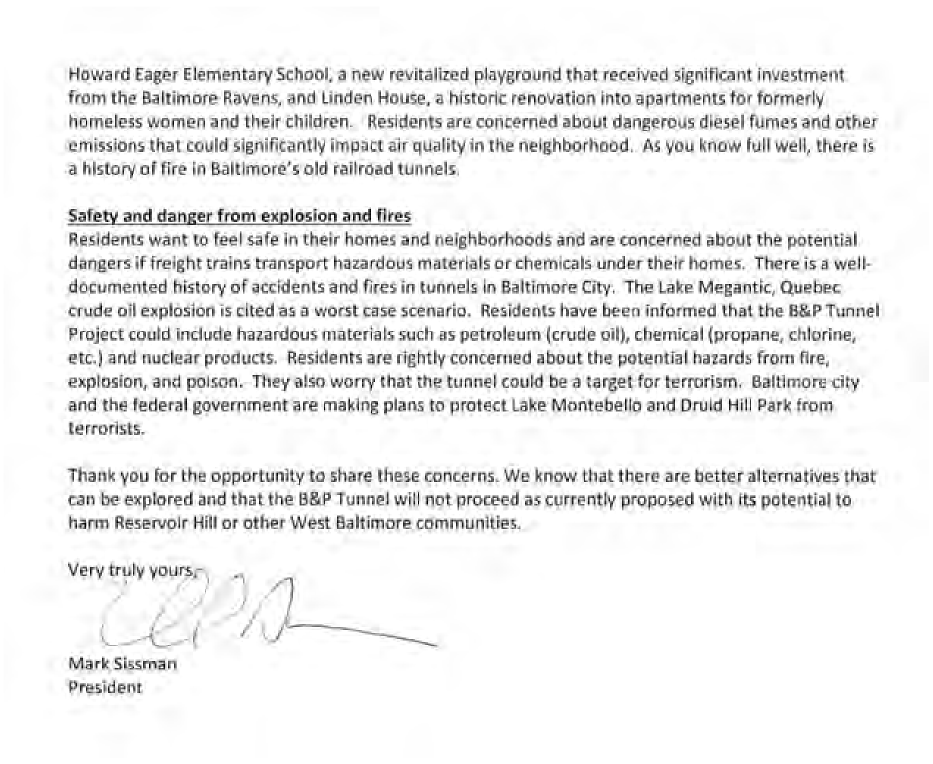
Response to Comment 4:

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 5:

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper

COMMENTS



Howard Eager Elementary School, a new revitalized playground that received significant investment from the Baltimore Ravens, and Linden House, a historic renovation into apartments for formerly homeless women and their children. Residents are concerned about dangerous diesel fumes and other emissions that could significantly impact air quality in the neighborhood. As you know full well, there is a history of fire in Baltimore's old railroad tunnels. 11

Safety and danger from explosion and fires

12 Residents want to feel safe in their homes and neighborhoods and are concerned about the potential dangers if freight trains transport hazardous materials or chemicals under their homes. There is a well-documented history of accidents and fires in tunnels in Baltimore City. The Lake Megantic, Quebec crude oil explosion is cited as a worst case scenario. Residents have been informed that the B&P Tunnel Project could include hazardous materials such as petroleum (crude oil), chemical (propane, chlorine, etc.) and nuclear products. Residents are rightly concerned about the potential hazards from fire, explosion, and poison. They also worry that the tunnel could be a target for terrorism. Baltimore city and the federal government are making plans to protect Lake Montebello and Druid Hill Park from terrorists.

Thank you for the opportunity to share these concerns. We know that there are better alternatives that can be explored and that the B&P Tunnel will not proceed as currently proposed with its potential to harm Reservoir Hill or other West Baltimore communities.

Very truly yours,

Mark Sissman
President

RESPONSES

labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at https://www.fra.dot.gov/Page/P0444. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Response to Comment 6:
The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

COMMENTS	RESPONSES

Response to Comment 7:
For information regarding the impacts to homes in the historic district, please refer back to the response to Comment 1**.**

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

Response to Comment 8:
Construction of the build alternatives would cause major utility relocations that would extend significant distances outside of the tunnel portal areas. Utility locations would be identified as the Project advances and relocations would take place to permit the reconstruction to advance as quickly as possible with minimal inconvenience to those living adjacent to the work areas.

The Project sponsor will develop and implement a Hazardous Spill Prevention Plan, a Hazardous Materials Remediation Plan, and an Emergency Management Plan to be implemented in the event of a tunnel emergency.

Response to Comment 9:
As stated in Comment 3, the impacts of construction noise and vibration will be mitigated.

The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS	RESPONSES
	Response to Comment 10: The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**. **Response to Comment 11:** The St. Francis Neighborhood Center, German Park, and the Linden House (also known as the David Bachrach House) would not be impacted by the Project. The John Eager Howard Elementary School would be closer to the site of the Intermediate Ventilation Facility located at 900-940 W North Ave. than it was to the Whitelock Street site; however, other than a visual change, would not be impacted. Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2. The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am to 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**. The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards

COMMENTS	RESPONSES

(NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

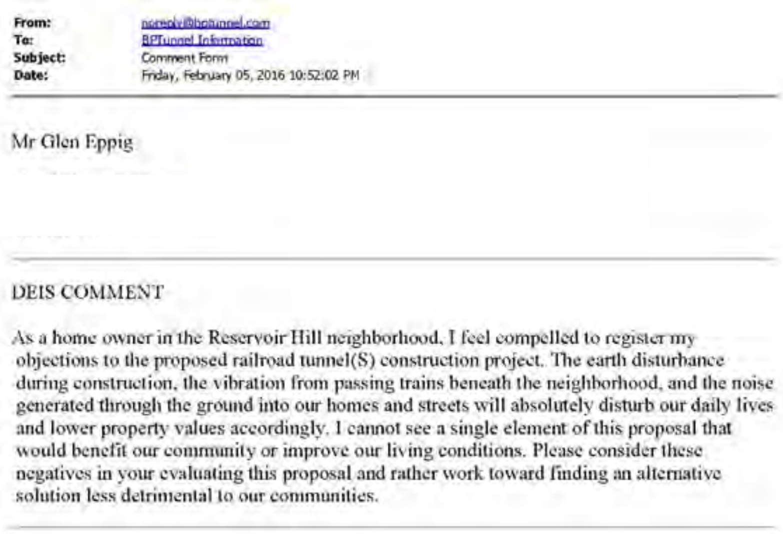
Response to Comment 12:
To minimize risk to the public, FRA requires a range of measures, including emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA). Emergency access/egress for pedestrians would be accomplished via emergency exits no farther than 2,500 feet apart or cross-passages between tunnels every 800 feet or less, or in some situations, a combination of both. For the Preferred Alternative, three locations would be provided for emergency egress to the surface, working with cross-passages in the tunnels. The emergency egress to ground level would be provided at the south portal Ventilation Facility, via the Intermediate Ventilation Facility, and at the north portal Ventilation Facility.

The ventilation facilities would be an essential Life/Safety component of the build alternatives, beyond their function of providing emergency access/egress for the tunnels. The ventilation facilities would include an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, and silencers and dampers. In the unlikely event of a fire, smoke could emerge from the vents, as is the case with any structural fire. The ventilation facilities and fans are built so that smoke emerging from the tunnel would be projected up and away from the community. In the very rare event of a tunnel fire, the path from a tunnel fire to the exhaust louvers is long and circuitous, with many bends that reduce the ability of particles to travel through the fans and louvers.

The Project has been planned mostly underground in order to avoid greater impacts to the community. Fire in a tunnel is much less damaging to a community than an above-ground track running through the neighborhood The new B&P Tunnel will be designed to be better equipped and prepared than the current B&P Tunnel.

COMMENTS

DEIS Comment 31:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Friday, February 05, 2016 10:52:02 PM

Mr Glen Eppig

DEIS COMMENT

As a home owner in the Reservoir Hill neighborhood, I feel compelled to register my
objections to the proposed railroad tunnel(S) construction project. The earth disturbance
1 during construction, the vibration from passing trains beneath the neighborhood, and the noise
2 generated through the ground into our homes and streets will absolutely disturb our daily lives
3 and lower property values accordingly. I cannot see a single element of this proposal that
would benefit our community or improve our living conditions. Please consider these
negatives in your evaluating this proposal and rather work toward finding an alternative
4 solution less detrimental to our communities.

RESPONSES

Response to Comment 1:

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using the FTA *Transit Noise and Vibration Impact Assessment*, and construction vibration levels were also evaluated using both FTA guidelines and standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

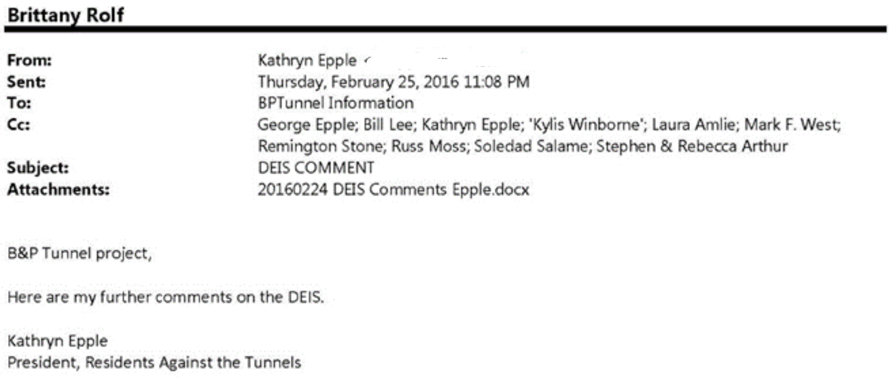
Response to Comment 2:

COMMENTS	RESPONSES
	The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS. **Response to Comment 3:** The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community. Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility. For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**. **Response to Comment 4:** The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

RESPONSES

DEIS Comment 32:



Brittany Rolf

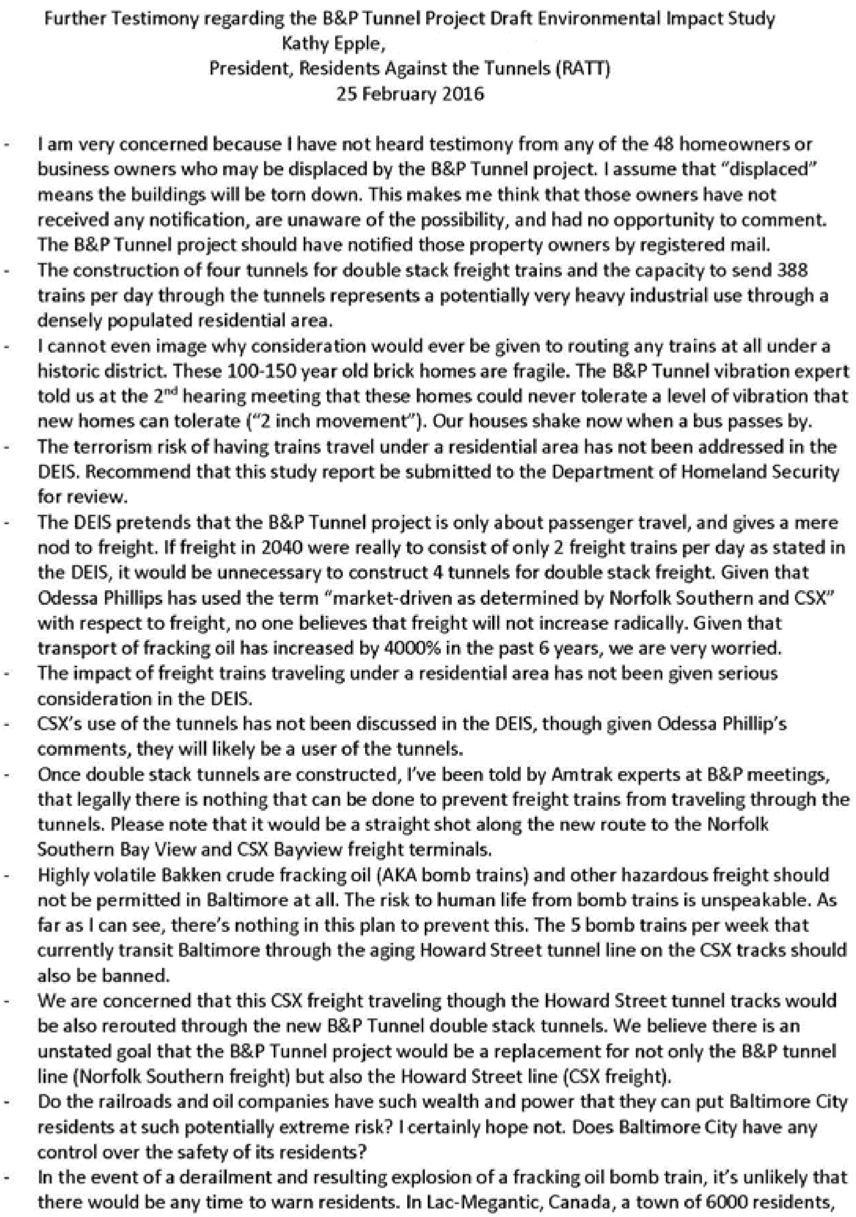
From:	Kathryn Epple <
Sent:	Thursday, February 25, 2016 11:08 PM
To:	BPTunnel Information
Cc:	George Epple; Bill Lee; Kathryn Epple; 'Kylis Winborne'; Laura Amlie; Mark F. West; Remington Stone; Russ Moss; Soledad Salame; Stephen & Rebecca Arthur
Subject:	DEIS COMMENT
Attachments:	20160224 DEIS Comments Epple.docx

B&P Tunnel project,

Here are my further comments on the DEIS.

Kathryn Epple
President, Residents Against the Tunnels

COMMENTS



Further Testimony regarding the B&P Tunnel Project Draft Environmental Impact Study
Kathy Epple,
President, Residents Against the Tunnels (RATT)
25 February 2016

1
- I am very concerned because I have not heard testimony from any of the 48 homeowners or business owners who may be displaced by the B&P Tunnel project. I assume that "displaced" means the buildings will be torn down. This makes me think that those owners have not received any notification, are unaware of the possibility, and had no opportunity to comment. The B&P Tunnel project should have notified those property owners by registered mail.
- The construction of four tunnels for double stack freight trains and the capacity to send 388 trains per day through the tunnels represents a potentially very heavy industrial use through a densely populated residential area.

2
3
- I cannot even image why consideration would ever be given to routing any trains at all under a historic district. These 100-150 year old brick homes are fragile. The B&P Tunnel vibration expert told us at the 2nd hearing meeting that these homes could never tolerate a level of vibration that new homes can tolerate ("2 inch movement"). Our houses shake now when a bus passes by.
- The terrorism risk of having trains travel under a residential area has not been addressed in the DEIS. Recommend that this study report be submitted to the Department of Homeland Security for review.

4
- The DEIS pretends that the B&P Tunnel project is only about passenger travel, and gives a mere nod to freight. If freight in 2040 were really to consist of only 2 freight trains per day as stated in the DEIS, it would be unnecessary to construct 4 tunnels for double stack freight. Given that Odessa Phillips has used the term "market-driven as determined by Norfolk Southern and CSX" with respect to freight, no one believes that freight will not increase radically. Given that transport of fracking oil has increased by 4000% in the past 6 years, we are very worried.
- The impact of freight trains traveling under a residential area has not been given serious consideration in the DEIS.
- CSX's use of the tunnels has not been discussed in the DEIS, though given Odessa Phillip's comments, they will likely be a user of the tunnels.
- Once double stack tunnels are constructed, I've been told by Amtrak experts at B&P meetings, that legally there is nothing that can be done to prevent freight trains from traveling through the tunnels. Please note that it would be a straight shot along the new route to the Norfolk Southern Bay View and CSX Bayview freight terminals.
- Highly volatile Bakken crude fracking oil (AKA bomb trains) and other hazardous freight should not be permitted in Baltimore at all. The risk to human life from bomb trains is unspeakable. As far as I can see, there's nothing in this plan to prevent this. The 5 bomb trains per week that currently transit Baltimore through the aging Howard Street tunnel line on the CSX tracks should also be banned.
- We are concerned that this CSX freight traveling though the Howard Street tunnel tracks would be also rerouted through the new B&P Tunnel double stack tunnels. We believe there is an unstated goal that the B&P Tunnel project would be a replacement for not only the B&P tunnel line (Norfolk Southern freight) but also the Howard Street line (CSX freight).
- Do the railroads and oil companies have such wealth and power that they can put Baltimore City residents at such potentially extreme risk? I certainly hope not. Does Baltimore City have any control over the safety of its residents?
- In the event of a derailment and resulting explosion of a fracking oil bomb train, it's unlikely that there would be any time to warn residents. In Lac-Megantic, Canada, a town of 6000 residents,

RESPONSES

Response to Comment 1:
Project design is not yet complete; once preliminary design is complete and the NEPA EIS process is finalized, the people who would be displaced by the alternative selected for implementation in the Record of Decision would be notified. The Project Team would provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. During the process, direct mailings were sent to residents in the Study Area, which included property owners within one-quarter mile of the Preferred Alternative, as well as additional property owners within the south portal area that could potentially be impacted by the Project.

The Preferred Alternative would displace 22 residential buildings in the Midtown-Edmondson neighborhood, Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings. Executive Order 12898 requires federal agencies ensure effective, meaningful involvement of low-income and minority populations in project planning and development and potentially affected EJ populations have fair and equal access to information. The Project Team has engaged in extensive public outreach throughout the development of the Project including three Public Open Houses, as well as ten community meetings where the public was given the opportunity to learn about the project development and engage in discussion with the Project Team. In addition to these meetings, Mitigation Working Groups comprising community organization representatives and members of the Project Team were established to determine the most effective mitigation for the Project. Details of this outreach are described in **Chapter VI**, as well as **Chapter VIII.**

Response to Comment 2:
The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**.

Response to Comment 3:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which

COMMENTS

47 people were vaporized in the resulting explosions. The blast was a kilometer across. Reservoir Hill alone has a similar population of 5600 residents.

- A sensible, comprehensive transportation plan is needed to address maglev, long distance passenger, commuter, light rail, freight train, and bus transportation. Such a plan should be carefully staged. The B&P Tunnel project is not that type of plan. It's a stovepipe plan.
- 5 If a maglev line is constructed, it should be routed into downtown Baltimore, possibly to Charles Center.
- If a maglev were constructed in the future, some passenger travel would be diverted from a new B&P Tunnel. This would permit an even greater increase in freight transportation. No discussion of this has been provided in the DEIS.
- Amtrak trains should be routed through improved track and tunnels along the existing B&P Tunnel right-of-way.
- 6 Penn Station is inadequate to handle the projected increase in passenger trains. An alternate or secondary plan is needed.
- Recommend that MARC trains be joined to a light rail or streetcars that would be routed along North Avenue.
- 7 No diesel trains should be permitted in Baltimore City. MARC should transition to a clean all-electric fleet, or else stay out of Baltimore. Baltimore already has a high pollution rate.
- 8 If diesel trains were prohibited, there would be no need to construct such a gargantuan vent building in the heart of Reservoir Hill. The planned vent building would preclude business development of this area and kill the current Community Farm.
- 9 Freight trains should be routed to port terminals under the Bay and Sparrows Point, which is already an industrial area. They should be kept out of downtown Baltimore.
- Today most people would acknowledge that it was wrong to build a road over the Jones Falls River. Similarly, it would be wrong to bore 4 double stack freight tunnels under a large swath of residential Baltimore, putting homeowners at risk.

RESPONSES

include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

COMMENTS

RESPONSES

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

Coordination with local, state, and national officials will be ongoing throughout the final design and implementation of the Project. Safety and security of the tunnel will be carefully considered as the Project advances.

Response to Comment 4:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes.

Amtrak design practices require new NEC infrastructure meet current standards, including Plate H (double stack) clearances. However, the new tunnel could not be used by double stack freight trains unless certain factors are met. These factors include:

- Substantial improvements, such as extensive additional vertical clearance improvements north and south of the B&P Tunnel to other NEC infrastructure; these improvements are not being designed as part of the B&P Project;
- Federal, state, local and regional support for aforementioned improvements including funding and policy;
- Increasing the bridge and catenary clearance on the NEC where double stack/high dimension trains are to travel;
- Construction of new or modified Union tunnel to Plate H/K (double stack) clearances; without a high dimension Union tunnel, double stack freight service using the B&P Tunnel is not possible;

COMMENTS	RESPONSES

- NS currently favors the Harrisburg-Perryville route for intermodal service;
- Freight schedules limited to off peak/night time periods which affects the scheduling flexibility and transit time for high priority (Intermodal) shipments for which time is absolutely critical; and
- Construction of track connection/s between the CSX and the NEC if CSX chooses to use the NEC.

In the short-term, there is no indication of any significant increase in freight movements through the B&P Tunnel. As Amtrak is responsible for operating a robust passenger rail service, the two inner tracks of the four-track tunnel system will be reserved (in all but emergency conditions) for high-speed passenger train operations, freight services will be restricted to share the two slower, outer tracks with MARC commuter rail trains. It is therefore not possible for the tunnel system to be converted to majority—or even significantly increased—freight operations.

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

COMMENTS	RESPONSES
	The Project sponsor will develop and implement a Hazardous Spill Prevention Plan and a Hazardous Materials Remediation Plan, as well as an Emergency Management Plan, to be implemented in the event of a tunnel emergency. Tunnel drainage concepts are being developed to meet MDE and BD standards for discharge into sanitary or stormwater utility systems. In addition, concepts are being designed to provide protection from diesel fuel and other hydrocarbon leaks into the tunnel drainage system. **Response to Comment 5:** The Maryland Department of Transportation oversees comprehensive transportation planning for the State. Prior studies have been performed that evaluate the full network of rail corridors, especially those in and around the City of Baltimore. The study of the B&P Tunnel partly resulted from the identification of this Project as a critical component to the greater rail access plan. A Maglev train would not utilize existing or planned Amtrak infrastructure. The design of such a system requires significantly different rights-of-way and infrastructure. The design criteria for Maglev are extremely restrictive and would only be achievable on new alignments. **Response to Comment 6:** Regarding the comment that Amtrak trains should be routed through improved track and tunnels along the existing B&P Tunnel right-of-way, this option was explored with Alternative 2. As described in **Chapter III** of the FEIS, Alternative 2: Reconstruct/Modernize Existing Tunnel was eliminated from further consideration for specific engineering and operational reasons. Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including: • Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction; • No parking along Wilson Street or Winchester Street during construction; • Limitations for residential and commercial access along Wilson Street and Winchester Street during construction; • Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park; • Substantial residential property impacts; and • Severe impacts to North Avenue, central Light Rail line, and CSX Main Line operations due to open cut construction through North Avenue, light rail, and CSX track beds. Additionally, for construction to advance, at minimum, one track would have to be removed from service. It would be impossible to provide adequate NEC service using a single track, particularly as ridership and train frequency increase over time.

COMMENTS	RESPONSES

Amtrak is in the early planning stages of developing a master plan for the future needs at Baltimore Penn Station (Amtrak, 2015). The plan will outline a series of incremental and phased improvements to the station facility and select land assets to guide the station's future development. The master plan will build off three studies: The Operations and Facilities Study, which will assess long-term operational and facility requirements for Baltimore Penn Station to meet growing capacity demands; the State of Good Repair Study; and the Commercial Development Study. Early coordination between the Project Team and Baltimore Penn Station representatives indicated that neither project would impact the other. Planned high level platforms at Baltimore Penn Station would not have any material effect on the alternatives considered for the Project.

Response to Comment 7:
Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am and 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am, and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are in **Chapter VI**.

The type of locomotive traveling through the tunnel is determined by the train service operator. As per the 2040 projections, of the 388 daily vehicles running through the tunnel, 222 will be electric (Acela, NE Regional, and Metropolitan), and 166 will be diesel (2 freight and 164 MARC). Please refer to **Chapter VI**, Section H for additional information.

Response to Comment 8:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that

COMMENTS	RESPONSES

corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Ventilations plants are necessary for public safety and would still be needed regardless of the type of energy used by vehicles in the tunnel. As described in **Chapter III** of the FEIS, the build alternatives would require three ventilation plants in order to meet current safety industry standards (NFPA 130), for projected NEC FUTURE train demand headway, and to ensure proper ventilation of the proposed tunnels. The purpose of the ventilation plant is to pull fresh air into the tunnel and ventilate the tunnel air to the outside.

The economic market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Response to Comment 9:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

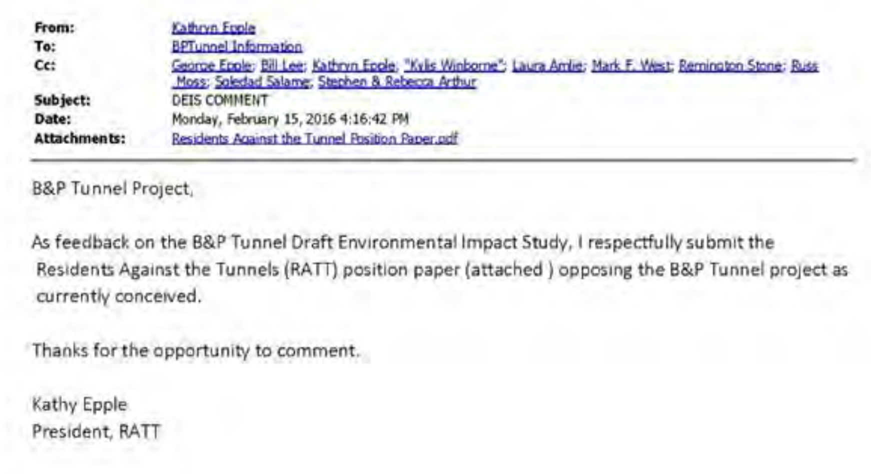
Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore

COMMENTS	RESPONSES
	Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

COMMENTS

RESPONSES

DEIS Comment 33:



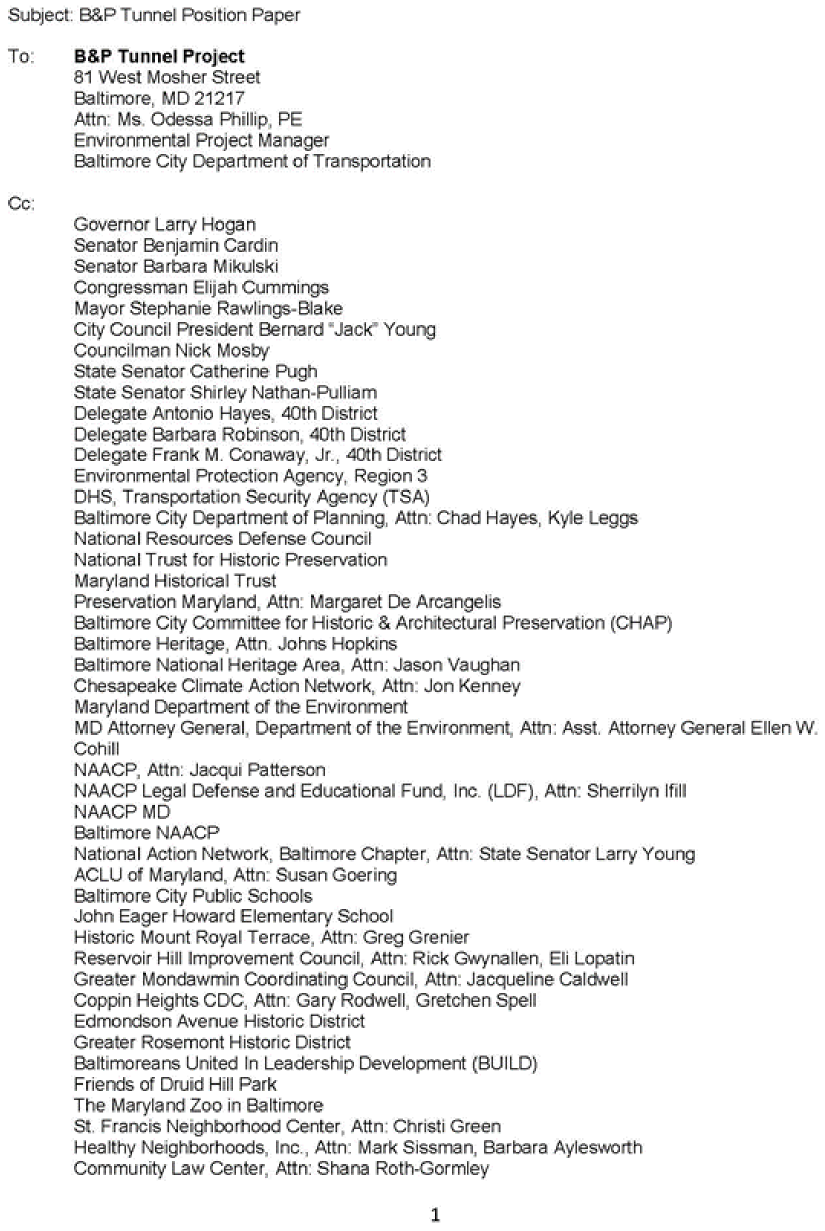
From: Kathryn Epple
To: BPTunnel Information
Cc: George Epple; Bill Lee; Kathryn Epple; "Kylis Winborne"; Laura Amlie; Mark F. West; Remington Stone; Russ Moss; Soledad Salame; Stephen & Rebecca Arthur
Subject: DEIS COMMENT
Date: Monday, February 15, 2016 4:16:42 PM
Attachments: Residents Against the Tunnel Position Paper.pdf

B&P Tunnel Project,

As feedback on the B&P Tunnel Draft Environmental Impact Study, I respectfully submit the Residents Against the Tunnels (RATT) position paper (attached) opposing the B&P Tunnel project as currently conceived.

Thanks for the opportunity to comment.

Kathy Epple
President, RATT

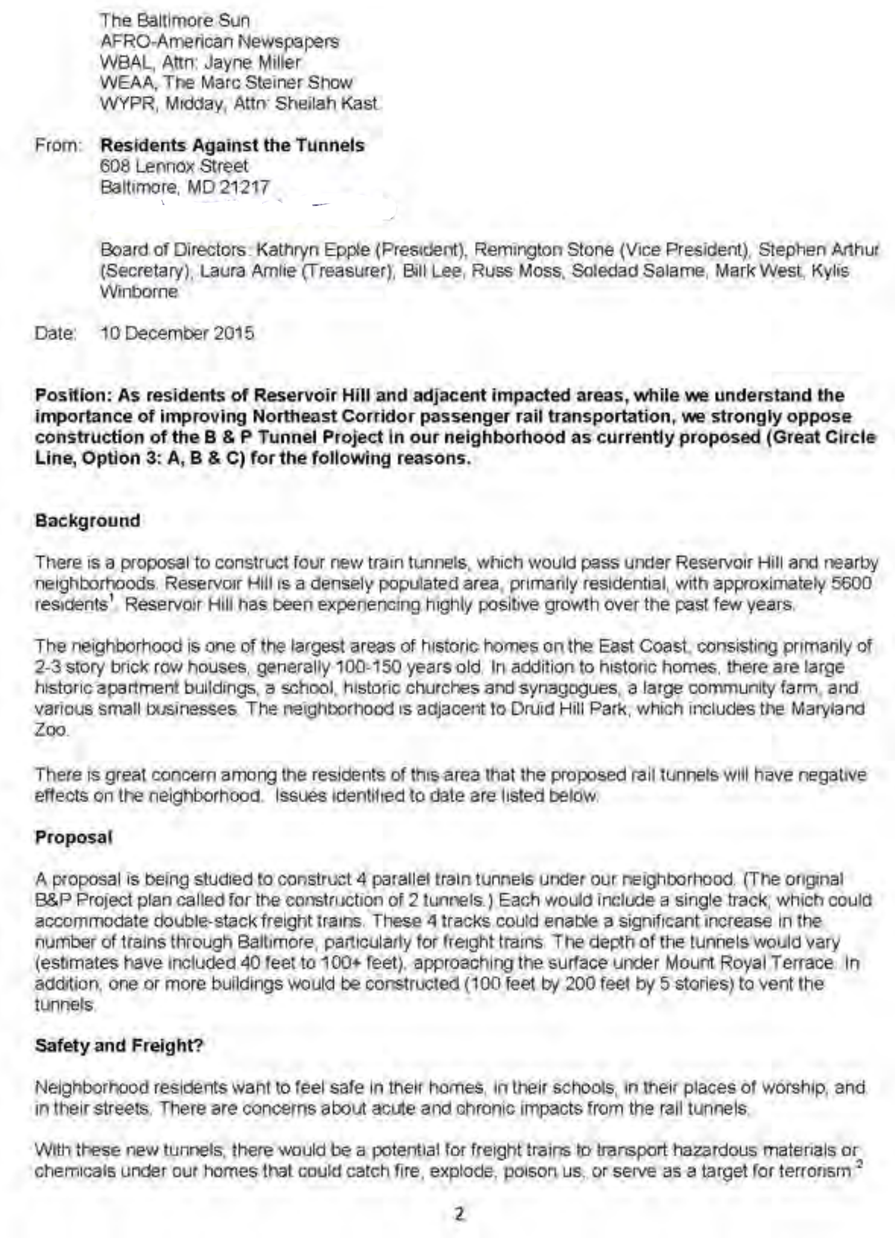


Subject: B&P Tunnel Position Paper

To: **B&P Tunnel Project**
81 West Mosher Street
Baltimore, MD 21217
Attn: Ms. Odessa Phillip, PE
Environmental Project Manager
Baltimore City Department of Transportation

Cc:
Governor Larry Hogan
Senator Benjamin Cardin
Senator Barbara Mikulski
Congressman Elijah Cummings
Mayor Stephanie Rawlings-Blake
City Council President Bernard "Jack" Young
Councilman Nick Mosby
State Senator Catherine Pugh
State Senator Shirley Nathan-Pulliam
Delegate Antonio Hayes, 40th District
Delegate Barbara Robinson, 40th District
Delegate Frank M. Conaway, Jr., 40th District
Environmental Protection Agency, Region 3
DHS, Transportation Security Agency (TSA)
Baltimore City Department of Planning, Attn: Chad Hayes, Kyle Leggs
National Resources Defense Council
National Trust for Historic Preservation
Maryland Historical Trust
Preservation Maryland, Attn: Margaret De Arcangelis
Baltimore City Committee for Historic & Architectural Preservation (CHAP)
Baltimore Heritage, Attn. Johns Hopkins
Baltimore National Heritage Area, Attn: Jason Vaughan
Chesapeake Climate Action Network, Attn: Jon Kenney
Maryland Department of the Environment
MD Attorney General, Department of the Environment, Attn: Asst. Attorney General Ellen W. Cohill
NAACP, Attn: Jacqui Patterson
NAACP Legal Defense and Educational Fund, Inc. (LDF), Attn: Sherrilyn Ifill
NAACP MD
Baltimore NAACP
National Action Network, Baltimore Chapter, Attn: State Senator Larry Young
ACLU of Maryland, Attn: Susan Goering
Baltimore City Public Schools
John Eager Howard Elementary School
Historic Mount Royal Terrace, Attn: Greg Grenier
Reservoir Hill Improvement Council, Attn: Rick Gwynallen, Eli Lopatin
Greater Mondawmin Coordinating Council, Attn: Jacqueline Caldwell
Coppin Heights CDC, Attn: Gary Rodwell, Gretchen Spell
Edmondson Avenue Historic District
Greater Rosemont Historic District
Baltimoreans United In Leadership Development (BUILD)
Friends of Druid Hill Park
The Maryland Zoo in Baltimore
St. Francis Neighborhood Center, Attn: Christi Green
Healthy Neighborhoods, Inc., Attn: Mark Sissman, Barbara Aylesworth
Community Law Center, Attn: Shana Roth-Gormley

COMMENTS



The Baltimore Sun
AFRO-American Newspapers
WBAL, Attn: Jayne Miller
WEAA, The Marc Steiner Show
WYPR, Midday, Attn: Sheilah Kast

From: **Residents Against the Tunnels**
608 Lennox Street
Baltimore, MD 21217

Board of Directors: Kathryn Epple (President), Remington Stone (Vice President), Stephen Arthur (Secretary), Laura Amlie (Treasurer), Bill Lee, Russ Moss, Soledad Salame, Mark West, Kylis Winborne

Date: 10 December 2015

Position: As residents of Reservoir Hill and adjacent impacted areas, while we understand the importance of improving Northeast Corridor passenger rail transportation, we strongly oppose construction of the B & P Tunnel Project in our neighborhood as currently proposed (Great Circle Line, Option 3: A, B & C) for the following reasons.

Background

There is a proposal to construct four new train tunnels, which would pass under Reservoir Hill and nearby neighborhoods. Reservoir Hill is a densely populated area, primarily residential, with approximately 5600 residents[1]. Reservoir Hill has been experiencing highly positive growth over the past few years.

The neighborhood is one of the largest areas of historic homes on the East Coast, consisting primarily of 2-3 story brick row houses, generally 100-150 years old. In addition to historic homes, there are large historic apartment buildings, a school, historic churches and synagogues, a large community farm, and various small businesses. The neighborhood is adjacent to Druid Hill Park, which includes the Maryland Zoo.

There is great concern among the residents of this area that the proposed rail tunnels will have negative effects on the neighborhood. Issues identified to date are listed below.

Proposal

1 A proposal is being studied to construct 4 parallel train tunnels under our neighborhood. (The original B&P Project plan called for the construction of 2 tunnels.) Each would include a single track, which could accommodate double-stack freight trains. These 4 tracks could enable a significant increase in the number of trains through Baltimore, particularly for freight trains. The depth of the tunnels would vary (estimates have included 40 feet to 100+ feet), approaching the surface under Mount Royal Terrace. In addition, one or more buildings would be constructed (100 feet by 200 feet by 5 stories) to vent the tunnels.

Safety and Freight?

Neighborhood residents want to feel safe in their homes, in their schools, in their places of worship, and in their streets. There are concerns about acute and chronic impacts from the rail tunnels.

2 With these new tunnels, there would be a potential for freight trains to transport hazardous materials or chemicals under our homes that could catch fire, explode, poison us, or serve as a target for terrorism[2]

2

RESPONSES

Response to Comment 1:
The Northeast Corridor (NEC) faces serious challenges to meet current and projected travel demand. Responding to these pressing issues, the FRA initiated the NEC FUTURE Environmental Impact Statement as a comprehensive planning process for future investment in the corridor. The NEC FUTURE identified the B&P Tunnel as one of the segments along the NEC that faces capacity constraints and reliability challenges due to multiple chokepoints and state-of-good-repair needs.

Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

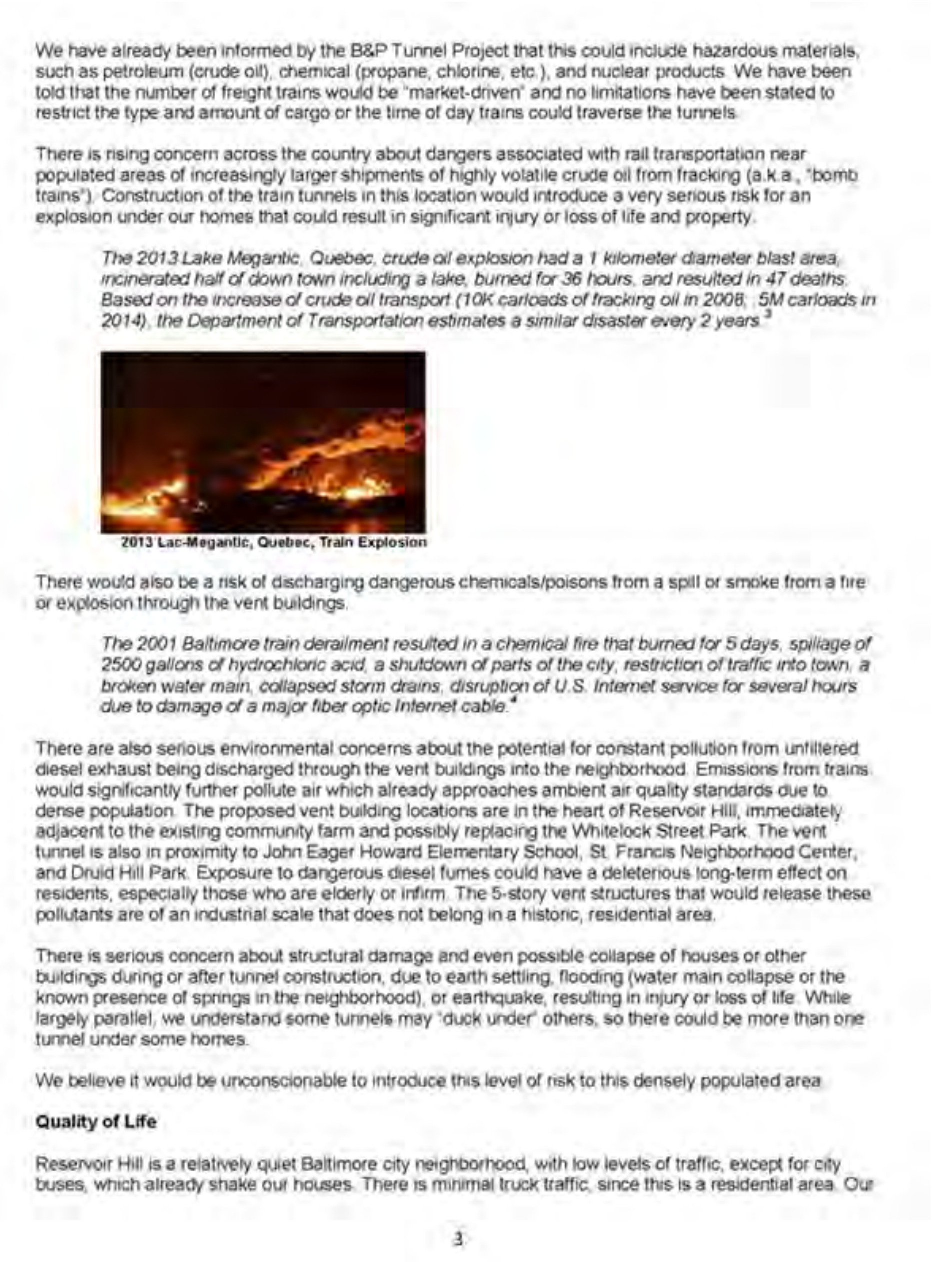
Amtrak design practices require new NEC infrastructure meet current standards, including Plate H (double stack) clearances. However, the new tunnel could not be used by double stack freight trains unless certain factors are met. These factors include:

- Substantial improvements, such as extensive additional vertical clearance improvements north and south of the B&P Tunnel to other NEC infrastructure; these improvements are not being designed as part of the B&P Project;
- Federal, state, local and regional support for aforementioned improvements including funding and policy;
- Increasing the bridge and catenary clearance on the NEC where double stack/high dimension trains are to travel;
- Construction of new or modified Union tunnel to Plate H/K (double stack) clearances; without a high dimension Union tunnel, double stack freight service using the B&P Tunnel is not possible;
- NS currently favors the Harrisburg-Perryville route for intermodal service;
- Freight schedules limited to off peak/night time periods which affects the scheduling flexibility and transit time for high priority (Intermodal) shipments for which time is absolutely critical; and
- Construction of track connection/s between the CSX and the NEC if CSX chooses to use the NEC.

In the short-term, there is no indication of any significant increase in freight movements through the B&P Tunnel.

The build alternatives will have an average tunnel depth of 115 feet.

COMMENTS



2 We have already been informed by the B&P Tunnel Project that this could include hazardous materials, such as petroleum (crude oil), chemical (propane, chlorine, etc.), and nuclear products. We have been told that the number of freight trains would be "market-driven" and no limitations have been stated to restrict the type and amount of cargo or the time of day trains could traverse the tunnels.

There is rising concern across the country about dangers associated with rail transportation near populated areas of increasingly larger shipments of highly volatile crude oil from fracking (a.k.a., "bomb trains"). Construction of the train tunnels in this location would introduce a very serious risk for an explosion under our homes that could result in significant injury or loss of life and property.

> *The 2013 Lake Megantic, Quebec, crude oil explosion had a 1 kilometer diameter blast area, incinerated half of down town including a lake, burned for 36 hours, and resulted in 47 deaths. Based on the increase of crude oil transport (10K carloads of fracking oil in 2008; .5M carloads in 2014), the Department of Transportation estimates a similar disaster every 2 years.*[3]

2013 Lac-Megantic, Quebec, Train Explosion

There would also be a risk of discharging dangerous chemicals/poisons from a spill or smoke from a fire or explosion through the vent buildings.

> *The 2001 Baltimore train derailment resulted in a chemical fire that burned for 5 days, spillage of 2500 gallons of hydrochloric acid, a shutdown of parts of the city, restriction of traffic into town, a broken water main, collapsed storm drains, disruption of U.S. Internet service for several hours due to damage of a major fiber optic Internet cable.*[4]

3 There are also serious environmental concerns about the potential for constant pollution from unfiltered diesel exhaust being discharged through the vent buildings into the neighborhood. Emissions from trains would significantly further pollute air which already approaches ambient air quality standards due to dense population. The proposed vent building locations are in the heart of Reservoir Hill, immediately adjacent to the existing community farm and possibly replacing the Whitelock Street Park. The vent tunnel is also in proximity to John Eager Howard Elementary School, St. Francis Neighborhood Center, and Druid Hill Park. Exposure to dangerous diesel fumes could have a deleterious long-term effect on residents, especially those who are elderly or infirm. The 5-story vent structures that would release these pollutants are of an industrial scale that does not belong in a historic, residential area.

4 There is serious concern about structural damage and even possible collapse of houses or other buildings during or after tunnel construction, due to earth settling, flooding (water main collapse or the known presence of springs in the neighborhood), or earthquake, resulting in injury or loss of life. While largely parallel, we understand some tunnels may "duck under" others, so there could be more than one tunnel under some homes.

We believe it would be unconscionable to introduce this level of risk to this densely populated area.

Quality of Life

Reservoir Hill is a relatively quiet Baltimore city neighborhood, with low levels of traffic, except for city buses, which already shake our houses. There is minimal truck traffic, since this is a residential area. Our

3

RESPONSES

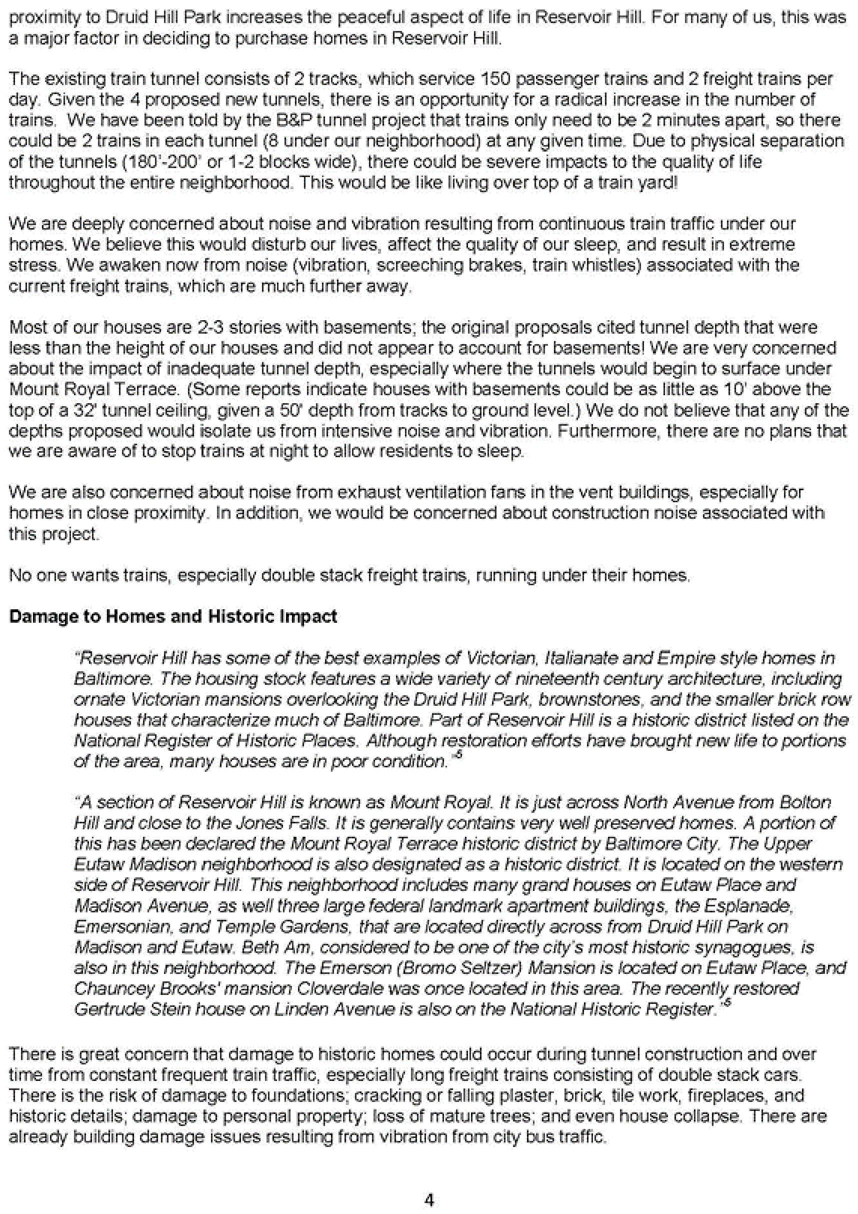
As described in **Chapter III**, **Section III** of the FEIS, the build alternatives would require three ventilation facilities in order to meet current safety industry standards (NFPA 130) for projected NEC FUTURE train demand headway, and to ensure proper ventilation of the proposed tunnels. The purpose of the ventilation facility is to pull fresh air into the tunnel and ventilate the tunnel air to the outside. One ventilation facility will be located at the south portal, and another will be located 300-600 feet from the north portal. A third ventilation facility would be located at street level, connected to the bored portion of the tunnels by a vertical shaft and connecting tunnel (plenum), splitting the proposed tunnel into two unequal lengths. The Intermediate Ventilation Facility would consist of a building, approximately 100 feet by 200 feet in plan with a maximum height of 60 feet.

Response to Comment 2:
NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

To minimize risk to the public, FRA requires a range of measures, including emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA). Emergency access/egress for pedestrians would be accomplished via emergency exits no farther than 2,500 feet apart or cross-passages between tunnels every 800 feet or less, or in some situations, a combination of both. For the Preferred Alternative, three locations would be provided for emergency egress to the surface, working with cross-passages in the tunnels. The emergency egress to ground level would be provided at the south portal Ventilation Facility, via the Intermediate Ventilation Facility, and at the north portal Ventilation Facility.

COMMENTS



proximity to Druid Hill Park increases the peaceful aspect of life in Reservoir Hill. For many of us, this was a major factor in deciding to purchase homes in Reservoir Hill.

5 The existing train tunnel consists of 2 tracks, which service 150 passenger trains and 2 freight trains per day. Given the 4 proposed new tunnels, there is an opportunity for a radical increase in the number of trains. We have been told by the B&P tunnel project that trains only need to be 2 minutes apart, so there could be 2 trains in each tunnel (8 under our neighborhood) at any given time. Due to physical separation of the tunnels (180'-200' or 1-2 blocks wide), there could be severe impacts to the quality of life throughout the entire neighborhood. This would be like living over top of a train yard!

6 We are deeply concerned about noise and vibration resulting from continuous train traffic under our homes. We believe this would disturb our lives, affect the quality of our sleep, and result in extreme stress. We awaken now from noise (vibration, screeching brakes, train whistles) associated with the current freight trains, which are much further away.

7 Most of our houses are 2-3 stories with basements; the original proposals cited tunnel depth that were less than the height of our houses and did not appear to account for basements! We are very concerned about the impact of inadequate tunnel depth, especially where the tunnels would begin to surface under Mount Royal Terrace. (Some reports indicate houses with basements could be as little as 10' above the top of a 32' tunnel ceiling, given a 50' depth from tracks to ground level.) We do not believe that any of the depths proposed would isolate us from intensive noise and vibration. Furthermore, there are no plans that we are aware of to stop trains at night to allow residents to sleep.

We are also concerned about noise from exhaust ventilation fans in the vent buildings, especially for homes in close proximity. In addition, we would be concerned about construction noise associated with this project.

No one wants trains, especially double stack freight trains, running under their homes.

Damage to Homes and Historic Impact

> 8 *"Reservoir Hill has some of the best examples of Victorian, Italianate and Empire style homes in Baltimore. The housing stock features a wide variety of nineteenth century architecture, including ornate Victorian mansions overlooking the Druid Hill Park, brownstones, and the smaller brick row houses that characterize much of Baltimore. Part of Reservoir Hill is a historic district listed on the National Register of Historic Places. Although restoration efforts have brought new life to portions of the area, many houses are in poor condition."*[5]
>
> *"A section of Reservoir Hill is known as Mount Royal. It is just across North Avenue from Bolton Hill and close to the Jones Falls. It is generally contains very well preserved homes. A portion of this has been declared the Mount Royal Terrace historic district by Baltimore City. The Upper Eutaw Madison neighborhood is also designated as a historic district. It is located on the western side of Reservoir Hill. This neighborhood includes many grand houses on Eutaw Place and Madison Avenue, as well three large federal landmark apartment buildings, the Esplanade, Emersonian, and Temple Gardens, that are located directly across from Druid Hill Park on Madison and Eutaw. Beth Am, considered to be one of the city's most historic synagogues, is also in this neighborhood. The Emerson (Bromo Seltzer) Mansion is located on Eutaw Place, and Chauncey Brooks' mansion Cloverdale was once located in this area. The recently restored Gertrude Stein house on Linden Avenue is also on the National Historic Register."*[5]

There is great concern that damage to historic homes could occur during tunnel construction and over time from constant frequent train traffic, especially long freight trains consisting of double stack cars. There is the risk of damage to foundations; cracking or falling plaster, brick, tile work, fireplaces, and historic details; damage to personal property; loss of mature trees; and even house collapse. There are already building damage issues resulting from vibration from city bus traffic.

4

RESPONSES

The ventilation facilities would be an essential Life/Safety component of the build alternatives, beyond their function of providing emergency access/egress for the tunnels. The ventilation facilities would include an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, and silencers and dampers. In the unlikely event of a fire, smoke could emerge from the vents, as is the case with any structural fire. The ventilation facilities and fans are built so that smoke emerging from the tunnel would be projected up and away from the community. In the very rare event of a tunnel fire, the path from a tunnel fire to the exhaust louvers is long and circuitous, with many bends that reduce the ability of particles to travel through the fans and louvers.

The Project has been planned mostly underground in order to avoid greater impacts to the community. Fire in a tunnel is much less damaging to a community than an above-ground track running through the neighborhood The new B&P Tunnel will be designed to be better equipped and prepared than the current B&P Tunnel.

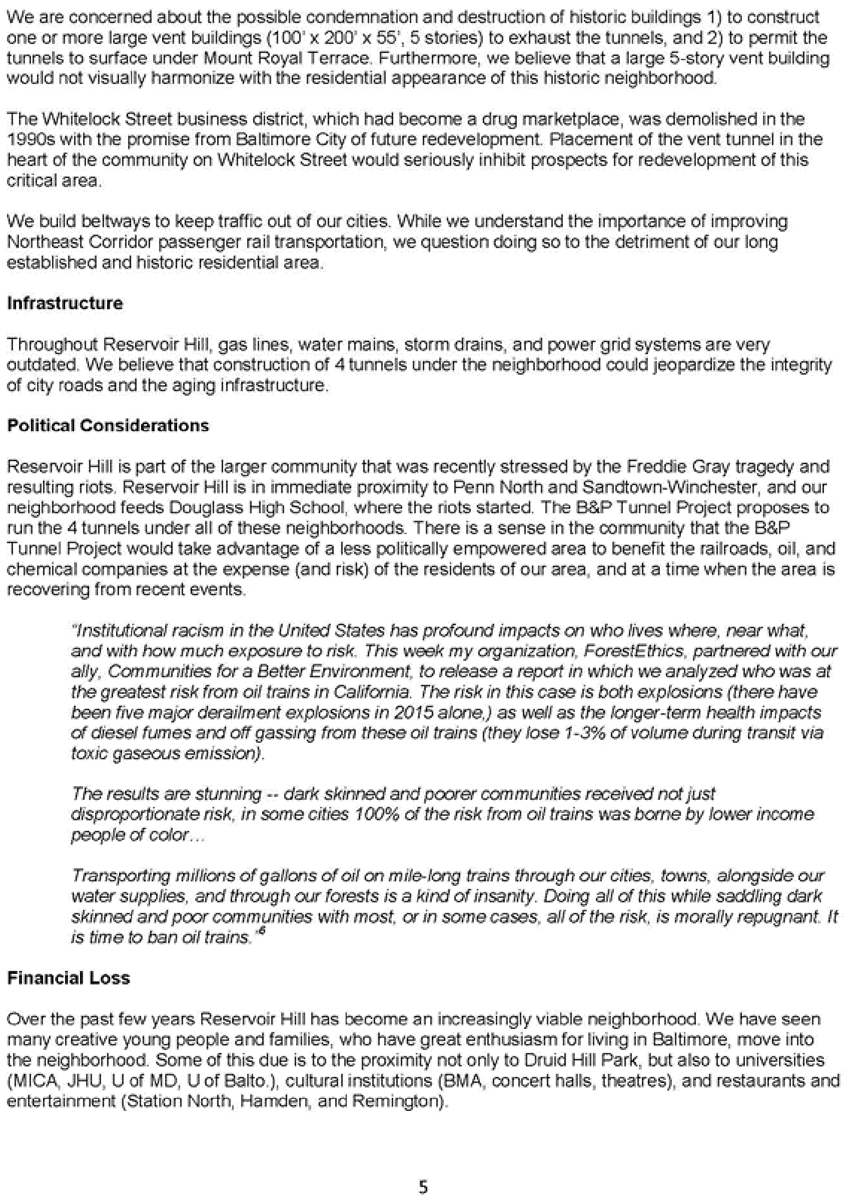
Response to Comment 3:

Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am and 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am, and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are in **Chapter VI**.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality; emissions would fall within all acceptable federal air quality standards. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, which have been set to safeguard public health. Because the concentrations of NO_2 were modeled to be within acceptable levels, all other criteria pollutant concentrations would be within NAAQS, as NOx is the most strictly regulated air pollutant generated from diesel

COMMENTS



We are concerned about the possible condemnation and destruction of historic buildings 1) to construct one or more large vent buildings (100' x 200' x 55', 5 stories) to exhaust the tunnels, and 2) to permit the tunnels to surface under Mount Royal Terrace. Furthermore, we believe that a large 5-story vent building would not visually harmonize with the residential appearance of this historic neighborhood.

The Whitelock Street business district, which had become a drug marketplace, was demolished in the 1990s with the promise from Baltimore City of future redevelopment. Placement of the vent tunnel in the heart of the community on Whitelock Street would seriously inhibit prospects for redevelopment of this critical area. 9

We build beltways to keep traffic out of our cities. While we understand the importance of improving Northeast Corridor passenger rail transportation, we question doing so to the detriment of our long established and historic residential area.

Infrastructure

10 Throughout Reservoir Hill, gas lines, water mains, storm drains, and power grid systems are very outdated. We believe that construction of 4 tunnels under the neighborhood could jeopardize the integrity of city roads and the aging infrastructure.

Political Considerations

11 Reservoir Hill is part of the larger community that was recently stressed by the Freddie Gray tragedy and resulting riots. Reservoir Hill is in immediate proximity to Penn North and Sandtown-Winchester, and our neighborhood feeds Douglass High School, where the riots started. The B&P Tunnel Project proposes to run the 4 tunnels under all of these neighborhoods. There is a sense in the community that the B&P Tunnel Project would take advantage of a less politically empowered area to benefit the railroads, oil, and chemical companies at the expense (and risk) of the residents of our area, and at a time when the area is recovering from recent events.

> *"Institutional racism in the United States has profound impacts on who lives where, near what, and with how much exposure to risk. This week my organization, ForestEthics, partnered with our ally, Communities for a Better Environment, to release a report in which we analyzed who was at the greatest risk from oil trains in California. The risk in this case is both explosions (there have been five major derailment explosions in 2015 alone,) as well as the longer-term health impacts of diesel fumes and off gassing from these oil trains (they lose 1-3% of volume during transit via toxic gaseous emission).*
>
> *The results are stunning -- dark skinned and poorer communities received not just disproportionate risk, in some cities 100% of the risk from oil trains was borne by lower income people of color…*
>
> *Transporting millions of gallons of oil on mile-long trains through our cities, towns, alongside our water supplies, and through our forests is a kind of insanity. Doing all of this while saddling dark skinned and poor communities with most, or in some cases, all of the risk, is morally repugnant. It is time to ban oil trains."*[6]

Financial Loss

12 Over the past few years Reservoir Hill has become an increasingly viable neighborhood. We have seen many creative young people and families, who have great enthusiasm for living in Baltimore, move into the neighborhood. Some of this due is to the proximity not only to Druid Hill Park, but also to universities (MICA, JHU, U of MD, U of Balto.), cultural institutions (BMA, concert halls, theatres), and restaurants and entertainment (Station North, Hamden, and Remington).

RESPONSES

locomotive operation. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

The Project has assessed the existing air quality conditions for the Project Study Area. Any changes to air quality would be in accordance with the Clean Air Act and other applicable air quality regulations. The Project Team has compared emissions from diesel train traffic through the Study Area with and without a new tunnel. With additional trains made possible by the new tunnel, the net change in the emissions of VOC, NO_x, and $PM_{2.5}$ will occur, but would be below *the de-minimis* levels that were set to safeguard public health. The proposed Project would not result in adverse impacts to air quality due to operational emissions.

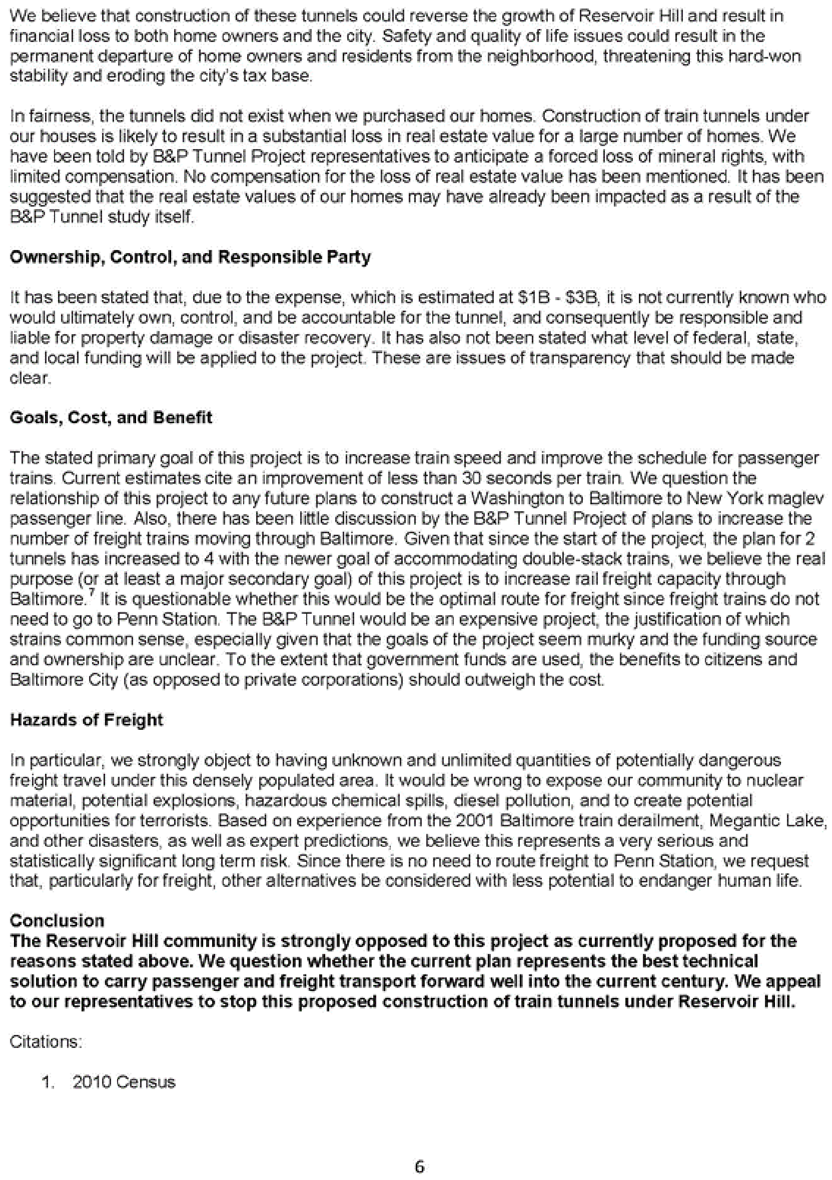
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 4:
All of the proposed Project infrastructure will be designed, constructed, and maintained using proven modern design and safety standards. The Project will be designed in accordance with applicable regulations, oversight agency guidance, and knowledge of safety standards to ensure optimal safety.

Response to Comment 5:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated

COMMENTS



12 We believe that construction of these tunnels could reverse the growth of Reservoir Hill and result in financial loss to both home owners and the city. Safety and quality of life issues could result in the permanent departure of home owners and residents from the neighborhood, threatening this hard-won stability and eroding the city's tax base.

In fairness, the tunnels did not exist when we purchased our homes. Construction of train tunnels under our houses is likely to result in a substantial loss in real estate value for a large number of homes. We have been told by B&P Tunnel Project representatives to anticipate a forced loss of mineral rights, with limited compensation. No compensation for the loss of real estate value has been mentioned. It has been suggested that the real estate values of our homes may have already been impacted as a result of the B&P Tunnel study itself.

Ownership, Control, and Responsible Party

13 It has been stated that, due to the expense, which is estimated at $1B - $3B, it is not currently known who would ultimately own, control, and be accountable for the tunnel, and consequently be responsible and liable for property damage or disaster recovery. It has also not been stated what level of federal, state, and local funding will be applied to the project. These are issues of transparency that should be made clear.

Goals, Cost, and Benefit

14 The stated primary goal of this project is to increase train speed and improve the schedule for passenger trains. Current estimates cite an improvement of less than 30 seconds per train. We question the relationship of this project to any future plans to construct a Washington to Baltimore to New York maglev passenger line. Also, there has been little discussion by the B&P Tunnel Project of plans to increase the number of freight trains moving through Baltimore. Given that since the start of the project, the plan for 2 tunnels has increased to 4 with the newer goal of accommodating double-stack trains, we believe the real purpose (or at least a major secondary goal) of this project is to increase rail freight capacity through Baltimore.[7] It is questionable whether this would be the optimal route for freight since freight trains do not need to go to Penn Station. The B&P Tunnel would be an expensive project, the justification of which strains common sense, especially given that the goals of the project seem murky and the funding source and ownership are unclear. To the extent that government funds are used, the benefits to citizens and Baltimore City (as opposed to private corporations) should outweigh the cost.

Hazards of Freight

15 In particular, we strongly object to having unknown and unlimited quantities of potentially dangerous freight travel under this densely populated area. It would be wrong to expose our community to nuclear material, potential explosions, hazardous chemical spills, diesel pollution, and to create potential opportunities for terrorists. Based on experience from the 2001 Baltimore train derailment, Megantic Lake, and other disasters, as well as expert predictions, we believe this represents a very serious and statistically significant long term risk. Since there is no need to route freight to Penn Station, we request that, particularly for freight, other alternatives be considered with less potential to endanger human life.

Conclusion

The Reservoir Hill community is strongly opposed to this project as currently proposed for the reasons stated above. We question whether the current plan represents the best technical solution to carry passenger and freight transport forward well into the current century. We appeal to our representatives to stop this proposed construction of train tunnels under Reservoir Hill.

Citations:

1. 2010 Census

RESPONSES

displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

Response to Comment 6:
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

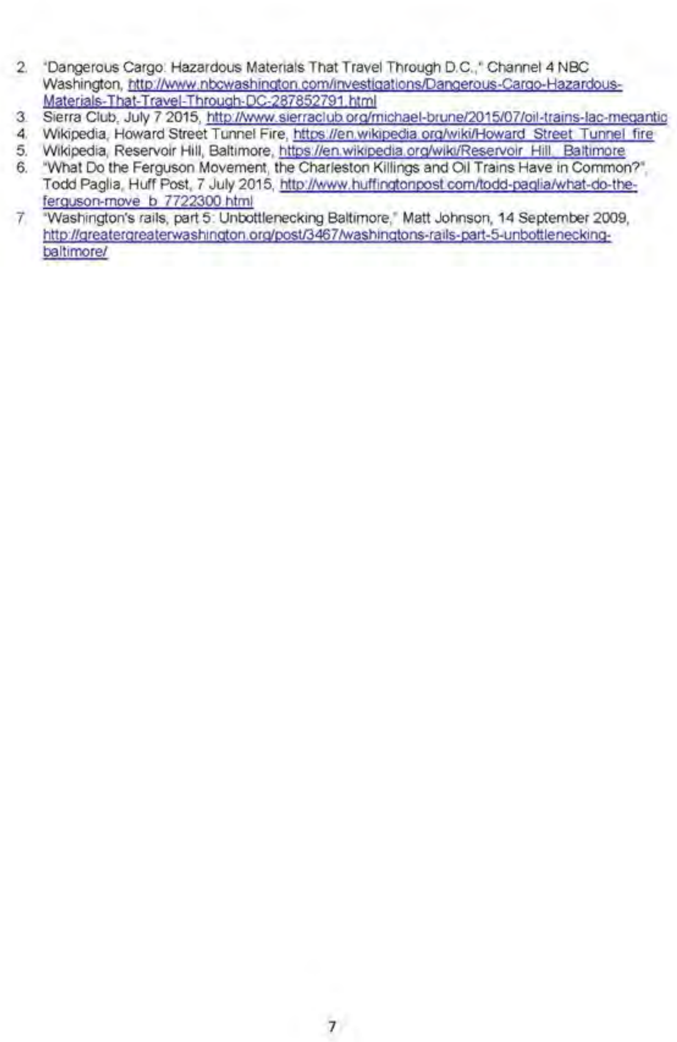
Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

COMMENTS



2. "Dangerous Cargo: Hazardous Materials That Travel Through D.C.," Channel 4 NBC Washington, http://www.nbcwashington.com/investigations/Dangerous-Cargo-Hazardous-Materials-That-Travel-Through-DC-287852791.html
3. Sierra Club, July 7 2015, http://www.sierraclub.org/michael-brune/2015/07/oil-trains-lac-megantic
4. Wikipedia, Howard Street Tunnel Fire, https://en.wikipedia.org/wiki/Howard_Street_Tunnel_fire
5. Wikipedia, Reservoir Hill, Baltimore, https://en.wikipedia.org/wiki/Reservoir_Hill,_Baltimore
6. "What Do the Ferguson Movement, the Charleston Killings and Oil Trains Have in Common?", Todd Paglia, Huff Post, 7 July 2015, http://www.huffingtonpost.com/todd-paglia/what-do-the-ferguson-move_b_7722300.html
7. "Washington's rails, part 5: Unbottlenecking Baltimore," Matt Johnson, 14 September 2009, http://greatergreaterwashington.org/post/3467/washingtons-rails-part-5-unbottlenecking-baltimore/

7

RESPONSES

The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

Response to Comment 7:
The build alternatives will have an average tunnel depth of 115 feet.

The three ventilation plant facilities would be subject to the operational noise level standards included in the Noise Regulation of the Health Code of Baltimore City § 9-206 Noise Regulation, 2015. This regulation provides the noise limits for manufacturing, commercial, and residential zones in Baltimore City– depending on the source of noise and the types of adjacent land uses. For noise generated within residential zones, there is a limit of 55 dBA at any point on the property line of the use.

Noise levels in the immediate vicinity of the ventilation plant buildings would be caused by the continual operation of the ventilation fans within each facility. The horizontal fans would operate periodically and would generate sound that would propagate through the louvers at the top of the ventilation facilities. Fans would operate periodically when NO_2 levels in the tunnel exceed a set threshold or in emergencies when smoke is present in the tunnel. NO_2 levels are likely to be highest when the level of diesel locomotive operations is highest, or when congestion causes trains to operate slowly or to idle in the tunnel. However, there is not enough information currently available to determine how many hours per day, on average, the fans would run and whether or not they would run during the night.

The Project sponsor will develop and implement a construction noise mitigation plan. The plan will include to the extent practicable:

- Location of construction equipment and material staging areas away from sensitive receptors where possible
- Temporary noise barriers and advanced construction of permanent barriers to serve during construction where possible
- Routing of construction traffic and haul routes along roads in non-noise sensitive areas.

Response to Comment 8:

COMMENTS	RESPONSES
	The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be fully compensated for the cost of repairs. **Response to Comment 9:** As noted in Comment 3 above, the preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**. **Response to Comment 10:** Construction of the build alternatives would cause major utility relocations such as that would extend significant distances outside of the tunnel portal areas. Utility locations would be identified as the Project advances and relocations would take place to permit the reconstruction to advance as quickly as possible with minimal inconvenience to those living adjacent to the work areas. **Response to Comment 11:** Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of Transportation's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

COMMENTS

RESPONSES

The B&P Project Team has performed an Environmental Justice (EJ) analysis consistent with EO 12898 and subsequent USDOT Orders. A critical component of the EO on environmental justice is public outreach. The Project Team has engaged extensively with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held with local officials; public, local, and regional organizations; government agencies; and representatives of affected EJ communities along the evaluated alternative alignment. Three Public Open Houses, as well as ten community meetings, have been held where the public was given the opportunity to learn about the project development in-person, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings. Additionally, the Project Team attended meetings at the request of the following organizations: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter's Clavier Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School.

Direct mailings to residents in the Study Area included property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The Project website continues to post meeting notices, Project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship, and other organizations.

The Project Team studied community composition in the areas affected by the build alternatives. It reviewed data from the American Community Survey 2009-2013 for minority and low-income populations, the National Center for Educational Statistics, government-assisted housing programs, historical references, city officials, field visits, and community meetings. From this information, the Project Team learned that of the 77 Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS.

Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations. For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A

COMMENTS	RESPONSES

would displace no residential buildings, and Alternative 3C would displace 12 residential buildings.

As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be underground which would reduce the overall impact to the communities. The Project sponsor will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project sponsor will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

Response to Comment 12:
The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

When the Project enters the right-of-way phase, an evaluation would be done on each property to determine if compensation for mineral rights is appropriate. Appropriateness of compensation would likely be based on location of the property in relation to the tunnel.

Response to Comment 13:
Amtrak will be the owner and operator of the new Tunnel. Amtrak will coordinate with local responders, who receive training for a variety of incidents related to specific facilities, including the B&P Tunnel. The tunnel would be constructed to meet current standards for fire protection. Additionally, the Project sponsor will develop and implement a Hazardous Spill Prevention Plan and a Hazardous Materials Remediation Plan, as well as an Emergency Management Plan to be implemented in the event of a tunnel emergency.

Local, state, and federal officials would be involved in any disaster recovery efforts. Responsibility for damages would be established at that time.

The Baltimore Metropolitan Council and MDOT amended the Fiscal Year 2011 State Transportation Improvement Program (TIP) list to add federal funds to the 2011-2014 Baltimore Regional Transportation Board's (BRTB) TIP for the existing B&P Tunnel Improvement Project (TIP # 92-1101-99). The current state of the Project is funded through a High-Speed Intercity Passenger Rail (HSIPR) grant for preliminary engineering and NEPA analysis. The BRTB approved funding for the study on May 24, 2011 (Resolution #11-26).

COMMENTS

RESPONSES

No funding for Project Construction has been identified to date; federal funding sources will be made public at the time of award.

Response to Comment 14:
While reducing travel time through the B&P Tunnel is one of several goals of the Project, it is not the reason that the Project was initiated. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Please refer to Comment 1 regarding the change from 2 tracks to 4 tracks and the double-stack trains.

Response to Comment 15:
Per **Chapter V** of the FEIS, it is projected that in 2040, 388 trains are expected to use the tunnel—386 passenger trains with no hazmat cargo, and two freight trains with limited hazmat cargo (based on current freight volumes projected into the future). Notwithstanding this likely very low volume of hazardous materials in the tunnel, the new tunnels would be designed to optimize safety and modern standards. Amtrak and Norfolk Southern (NS) are anticipated to use existing fleets and newly acquired equipment in the tunnel. This equipment must meet federal standards for safe operations. In addition, the tunnel will be equipped with Automatic Train Control (ATC) and Positive Train Control (PTC) systems, which use computer systems to control the speed of both passenger and

COMMENTS

RESPONSES

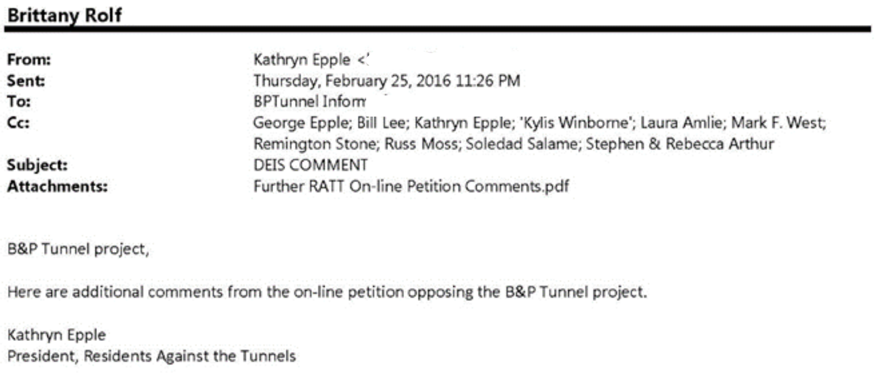
freight trains within the tunnel. The Project sponsor will develop and implement a Hazardous Spill Prevention Plan and a Hazardous Materials Remediation Plan, as well as an Emergency Management Plan, to be implemented in the event of a tunnel emergency. Tunnel drainage concepts are being developed to meet MDE and BD standards for discharge into sanitary or stormwater utility systems. In addition, concepts are being designed to provide protection from diesel fuel and other hydrocarbon leaks into the tunnel drainage system.

Finally, as Amtrak is responsible for operating a robust passenger rail service, the two inner tracks of the four-track tunnel system will be reserved (in all but emergency conditions) for high-speed passenger train operations, and freight services will be restricted to share the two slower, outer tracks with MARC commuter rail trains. It is therefore not possible for the tunnel system to accommodate significantly increased freight operations.

COMMENTS

RESPONSES

DEIS Comment 34:



Brittany Rolf

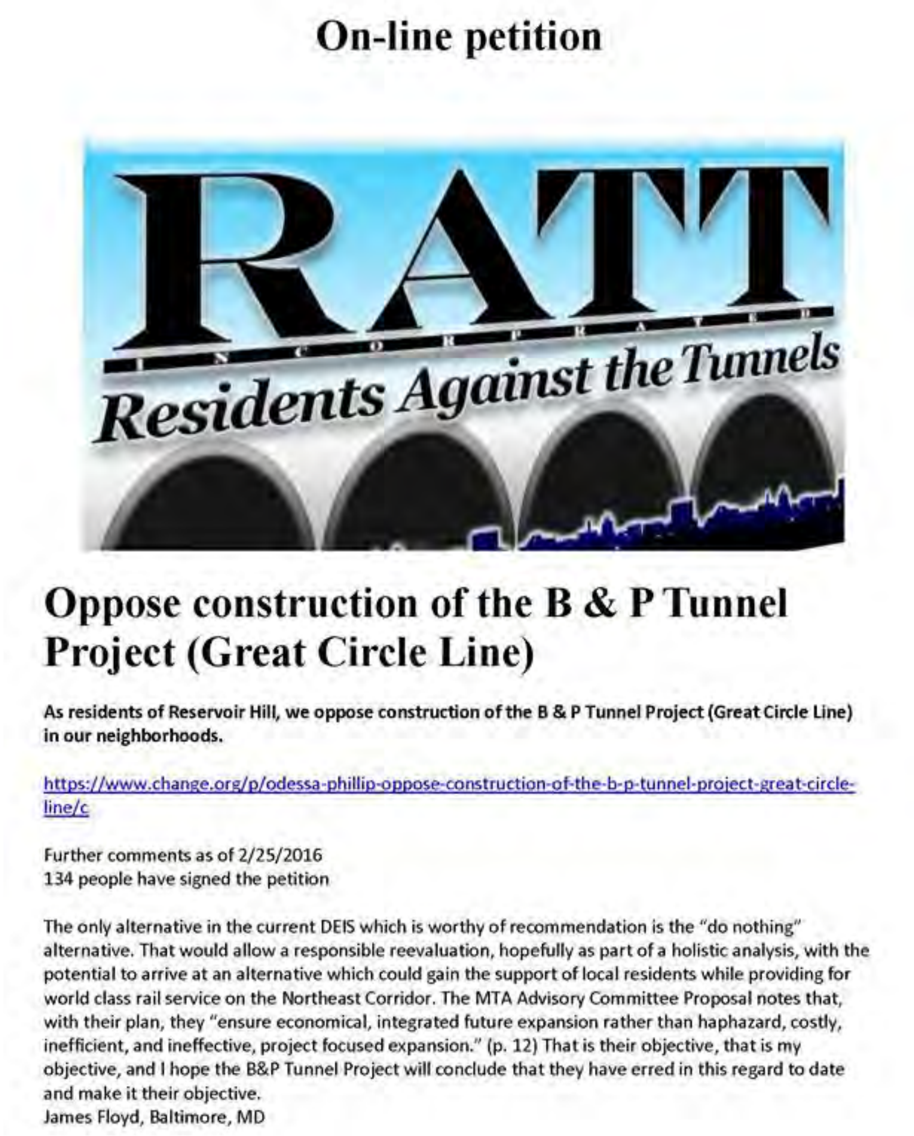
From: Kathryn Epple <'
Sent: Thursday, February 25, 2016 11:26 PM
To: BPTunnel Inform
Cc: George Epple; Bill Lee; Kathryn Epple; 'Kylis Winborne'; Laura Amlie; Mark F. West; Remington Stone; Russ Moss; Soledad Salame; Stephen & Rebecca Arthur
Subject: DEIS COMMENT
Attachments: Further RATT On-line Petition Comments.pdf

B&P Tunnel project,

Here are additional comments from the on-line petition opposing the B&P Tunnel project.

Kathryn Epple
President, Residents Against the Tunnels

COMMENTS


RATT
INCORPORATED
Residents Against the Tunnels

On-line petition

Oppose construction of the B & P Tunnel Project (Great Circle Line)

As residents of Reservoir Hill, we oppose construction of the B & P Tunnel Project (Great Circle Line) in our neighborhoods.

https://www.change.org/p/odessa-phillip-oppose-construction-of-the-b-p-tunnel-project-great-circle-line/c

Further comments as of 2/25/2016
134 people have signed the petition

1 The only alternative in the current DEIS which is worthy of recommendation is the "do nothing" alternative. That would allow a responsible reevaluation, hopefully as part of a holistic analysis, with the potential to arrive at an alternative which could gain the support of local residents while providing for world class rail service on the Northeast Corridor. The MTA Advisory Committee Proposal notes that, with their plan, they "ensure economical, integrated future expansion rather than haphazard, costly, inefficient, and ineffective, project focused expansion." (p. 12) That is their objective, that is my objective, and I hope the B&P Tunnel Project will conclude that they have erred in this regard to date and make it their objective.
James Floyd, Baltimore, MD

RESPONSES

Response to Comment 1:
A "do nothing" alternative, known in this FEIS as Alternative 1: No-Build, does not meet the stated Project Purpose and Need. The Project was initiated because the existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

The MTA Citizen Advisory Committee report (**DEIS Comment #11**) recommends a comprehensive planning approach for local, state, and regional rail that is beyond the purview of the B&P Tunnel Project.

COMMENTS

2 The tunnel and the ventilation plant will have dire consequences on the health of our neighborhood. I have a 4-month-old baby whose every breath would be contaminated by this project. We invested in this neighborhood because we love the community and see the long-term potential for this area. We wish the project leaders could share that vision.
Carlos Payes, Baltimore, MD

3 I am greatly concerned about the current plans to construct a tunnel beneath Reservoir Hill, particularly the proposed ventilation building to be built at Whitelock and Brookfield. This massive building would destroy the new community park and Whitelock Community Farm and endanger the health of residents by spewing toxic fumes from hundreds of diesel trains per day. An industrial building of this scale should not be built in a residential neighborhood. The current proposals are not acceptable and another solution must be found.
Justin Kuk, Baltimore, MD

4 I'm appalled that this proposal is even being seriously considered. With all of the investment that is taking place in Reservoir Hill today, it's unfathomable that planners could consider a proposal that would devastate public health, quality of life, property values and plans for future development. Imagine if Robert Moses had had his way in the West Village! We are facing a similar catastrophe in Reservoir Hill. There must be another way to solve this problem that doesn't ruin our lives. Prepare for a messy fight if you don't look harder for it.
Elizabeth Ryan, Baltimore, MD

5 I live in Reservoir Hill and believe the proposed tunnel project will be disastrous for our homes and safety, and does not provide an informed and appropriate plan for improving rail service. In addition, the proposal endangers historical districts and undercuts already stressed Baltimore communities of diversity and working class and low-income residents.
stephanie Hull, Baltimore, MD

6 I'm signing because I strongly oppose the construction of a gigantic and hazardous tunnel in the middle of my residential neighborhood. I have heard that there are many other options that would avoid this tunnel being built in our neighborhood, that BP Tunnel is not considering because of how much it would cost for them. This is unacceptable. Our community will not allow this to be built.
Sarah Edelsburg, Baltimore, MD

RESPONSES

Response to Comment 2:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

Chapter VI of this FEIS specifically reviewed Air Quality, Water, Soil, and Hazardous Material impacts on Children's Health. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of $NO_{x,}$ VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

Response to Comment 3:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 4:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

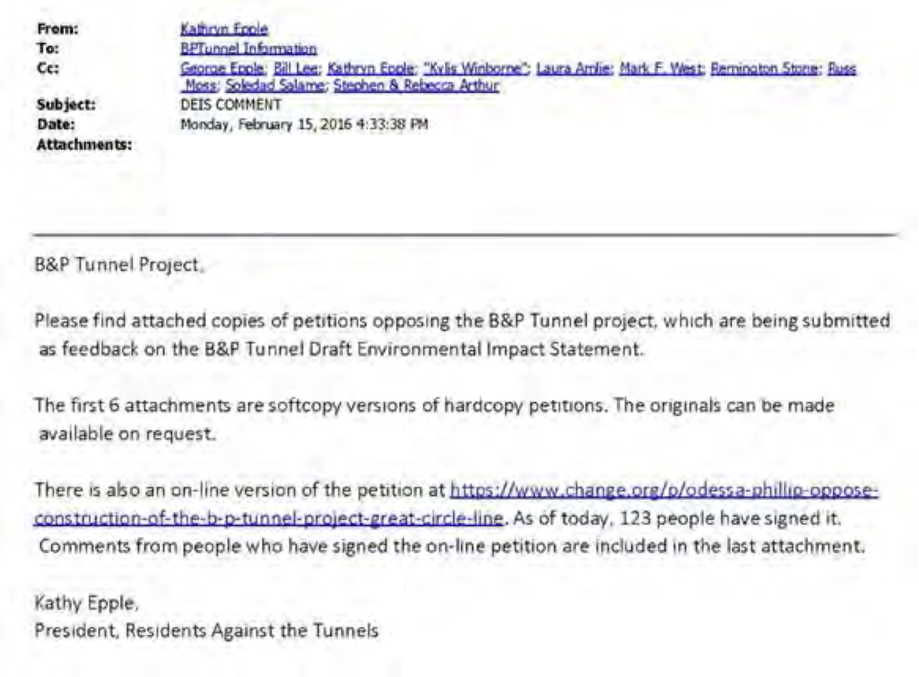
The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS	RESPONSES
	During the study a total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)). Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative. **Response to Comment 5:** Rail service improvements are detailed within the FEIS; furthermore, while improving rail service is a goal of the Project, it is not the sole reason the Project was initiated. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS. The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**. The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically

COMMENTS	RESPONSES
	disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS. **Response to Comment 6:** As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)). Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

COMMENTS

DEIS Comment 35:



From: Kathryn Epple
To: BPTunnel Information
Cc: George Epple; Bill Lee; Kathryn Epple; "Kylis Winborne"; Laura Amlie; Mark F. West; Remington Stone; Russ Moss; Soledad Salame; Stephen & Rebecca Arthur
Subject: DEIS COMMENT
Date: Monday, February 15, 2016 4:33:38 PM
Attachments:

B&P Tunnel Project,

Please find attached copies of petitions opposing the B&P Tunnel project, which are being submitted as feedback on the B&P Tunnel Draft Environmental Impact Statement.

The first 6 attachments are softcopy versions of hardcopy petitions. The originals can be made available on request.

There is also an on-line version of the petition at https://www.change.org/p/odessa-phillip-oppose-construction-of-the-b-p-tunnel-project-great-circle-line. As of today, 123 people have signed it. Comments from people who have signed the on-line petition are included in the last attachment.

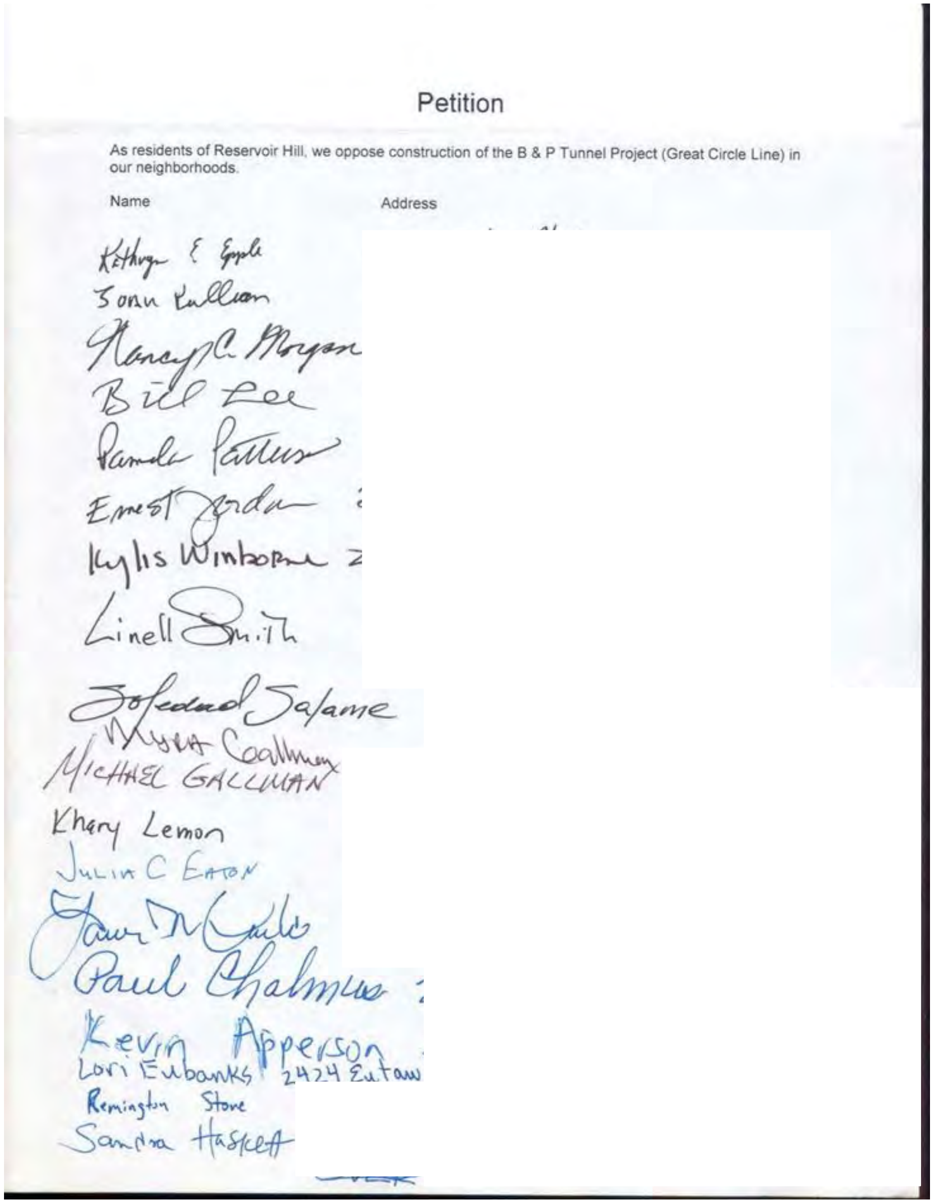
Kathy Epple,
President, Residents Against the Tunnels

RESPONSES

Thank you for your comment. We have reviewed the petition and the signatories.

COMMENTS

RESPONSES



Petition

As residents of Reservoir Hill, we oppose construction of the B & P Tunnel Project (Great Circle Line) in our neighborhoods.

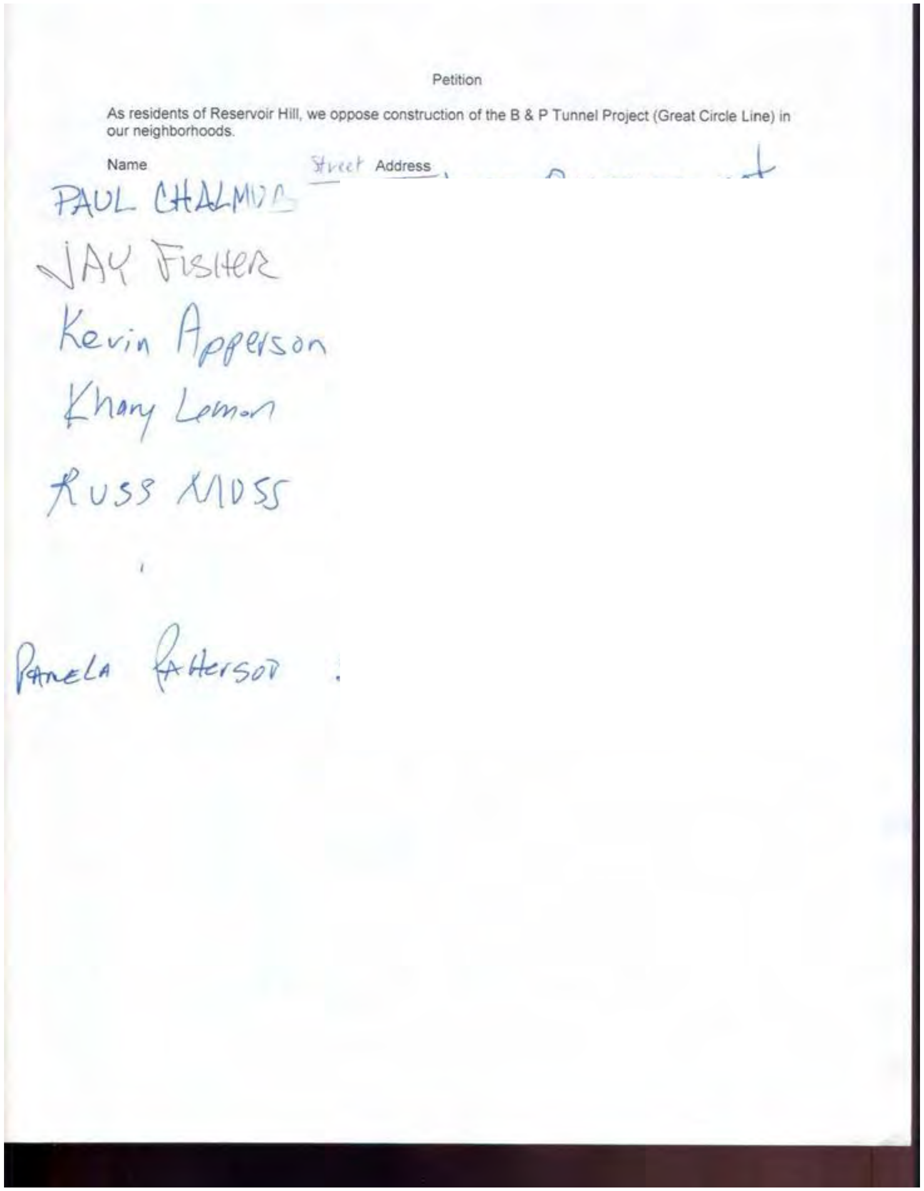
Name Address

[redacted]

Kathryn E Gyple
Sonn Kullian
Nancy C. Morgan
Bill Lee
Pamela Patterson
Ernest Jordan
Kylis Winborne
Linell Smith
Soledad Salame
Myra Gallman
MICHAEL GALLMAN
Khary Lemon
JULIA C EATON
Paul Chalmers
Kevin Apperson
Lori Eubanks 2424 Eutaw
Remington Store
Sandra Haskett

COMMENTS

RESPONSES



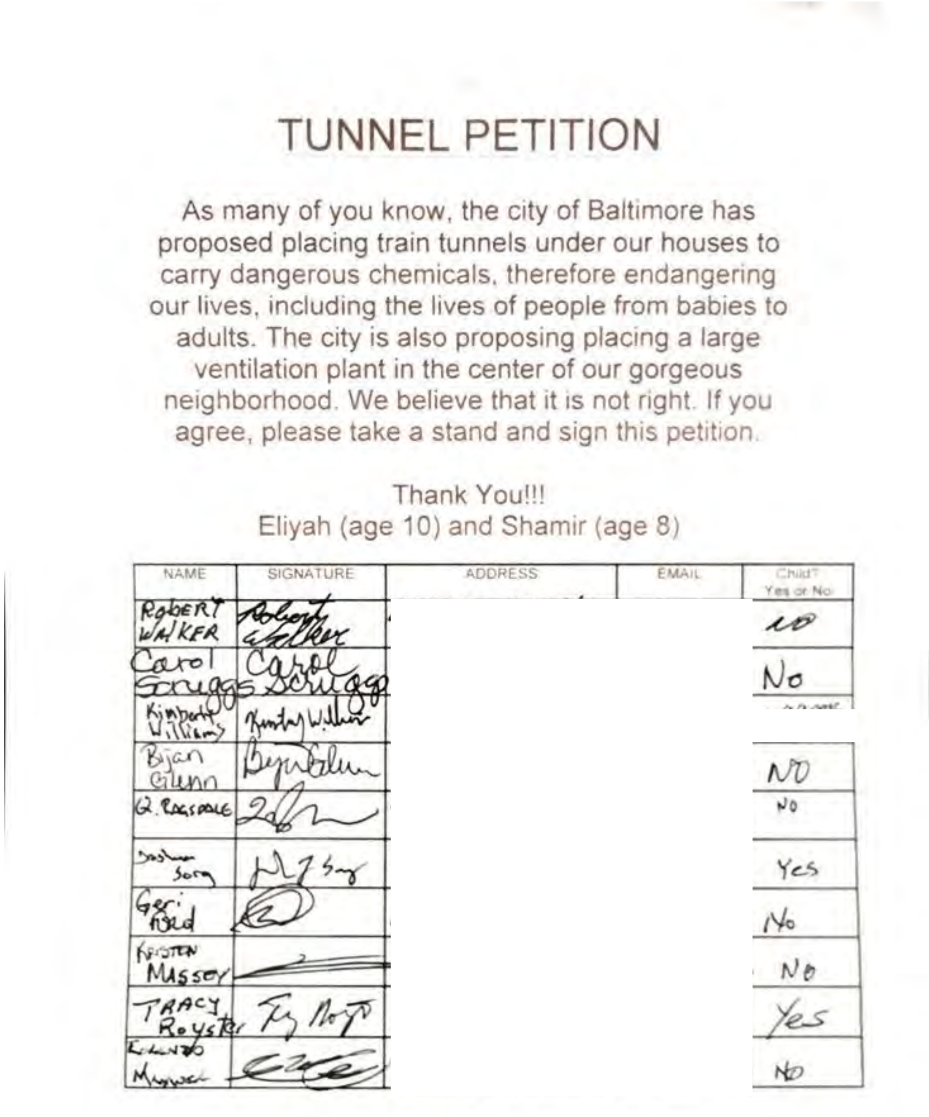
Petition

As residents of Reservoir Hill, we oppose construction of the B & P Tunnel Project (Great Circle Line) in our neighborhoods.

Name	Street Address
PAUL CHALM	[redacted]
JAY FISHER	
Kevin Apperson	
Khary Lemon	
RUSS MOSS	
Pamela Patterson	

COMMENTS

RESPONSES



TUNNEL PETITION

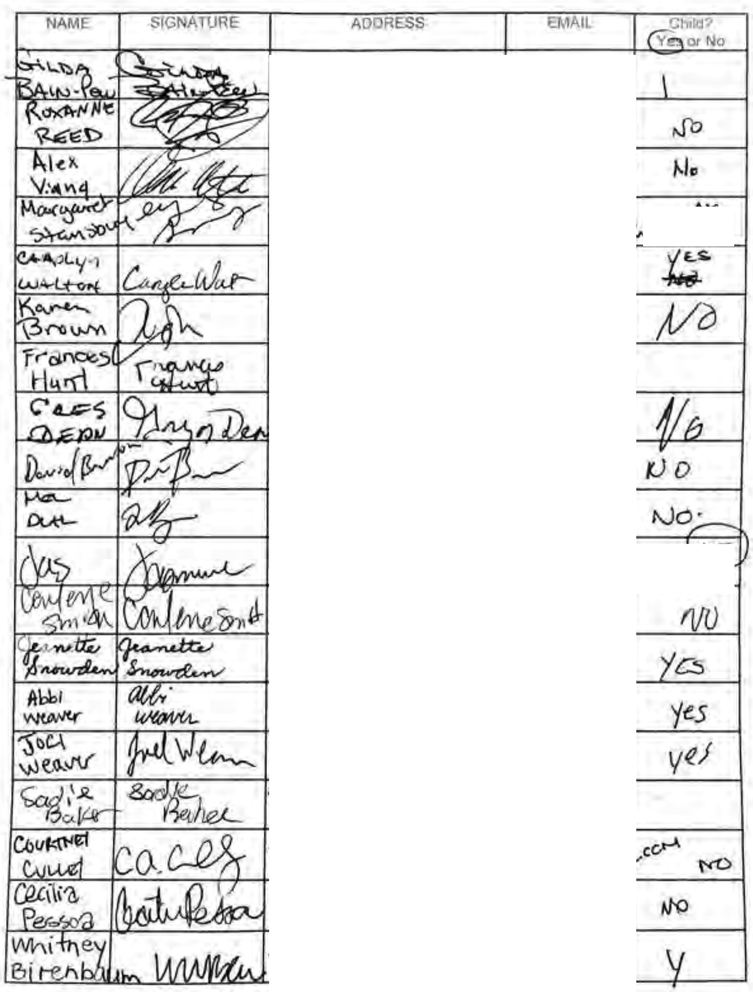
As many of you know, the city of Baltimore has proposed placing train tunnels under our houses to carry dangerous chemicals, therefore endangering our lives, including the lives of people from babies to adults. The city is also proposing placing a large ventilation plant in the center of our gorgeous neighborhood. We believe that it is not right. If you agree, please take a stand and sign this petition.

Thank You!!!
Eliyah (age 10) and Shamir (age 8)

NAME	SIGNATURE	ADDRESS	EMAIL	Child? Yes or No
Robert Walker	Robert Walker	[redacted]	[redacted]	no
Carol Scruggs	Carol Scruggs	[redacted]	[redacted]	No
Kimberly Williams	Kimberly Williams	[redacted]	[redacted]	[redacted]
Bijan Glenn	Bijan Glenn	[redacted]	[redacted]	NO
Q. Ragsdale		[redacted]	[redacted]	NO
Joshua Song		[redacted]	[redacted]	Yes
Geri Ford		[redacted]	[redacted]	No
Kristen Massey		[redacted]	[redacted]	NO
Tracy Royster		[redacted]	[redacted]	Yes
Rolando Maxwell		[redacted]	[redacted]	NO

COMMENTS

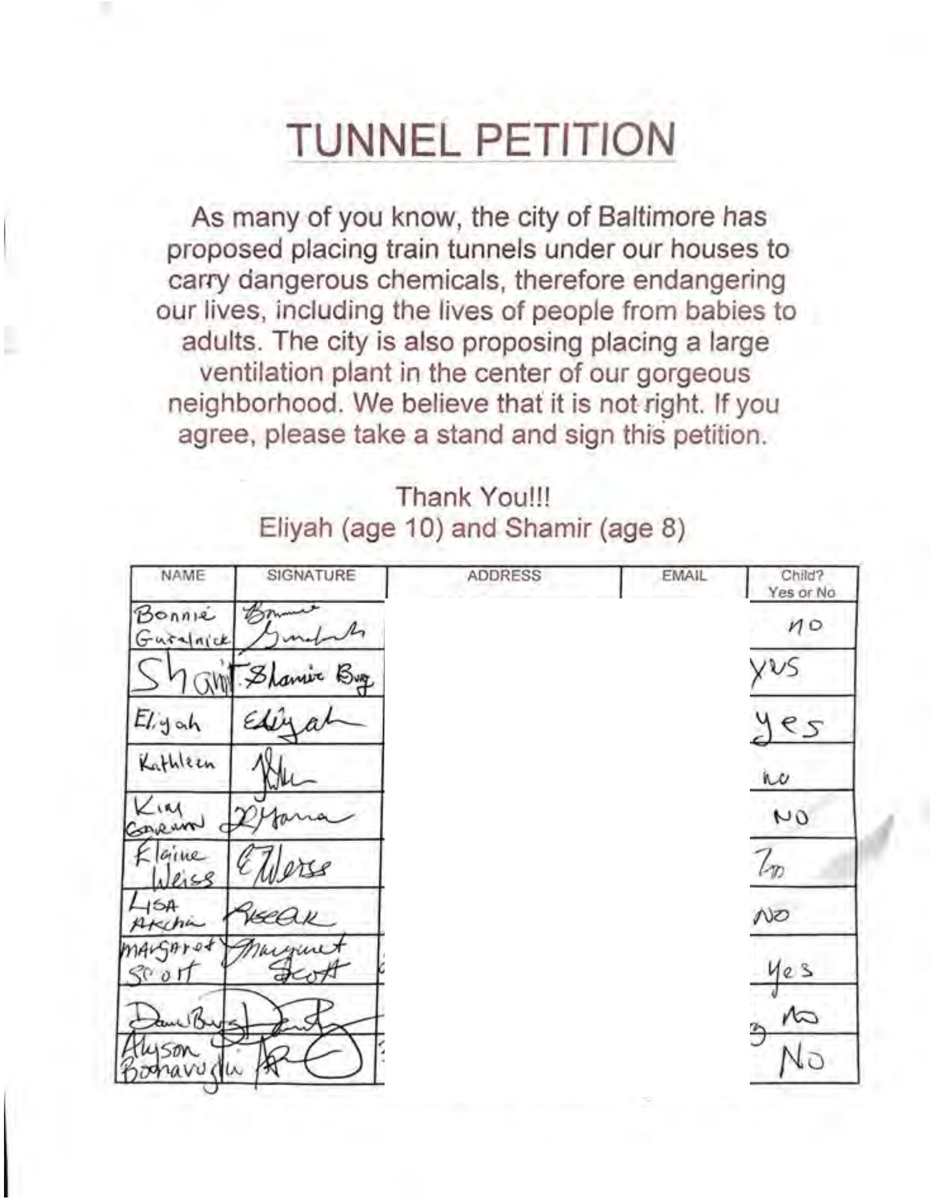
RESPONSES



NAME	SIGNATURE	ADDRESS	EMAIL	Child? [✓ Yes] or No
GILDA BAIN-Pow	Gilda Bain-Pow			|
ROXANNE REED				NO
Alex Viang				No
Margaret Stansbury				
CAROLYN WALTON	Carole Walt			YES ~~NO~~
Karen Brown				NO
Frances Hunt	Frances Hunt			
GREG DEAN	Greg Dean			NO
David Burton	D Burton			NO
Ha Duh				NO.
Jas	Jasmine			
Conlene Smith	Conlene Smith			NO
Jeanette Snowden	Jeanette Snowden			YES
Abbi weaver	Abbi weaver			yes
Joel weaver	Joel Weaver			yes
Sadie Baker	Sadie Baker			
COURTNEY Culley	C.A. C		.com	NO
Cecilia Pessoa	Cecilia Pessoa			NO
Whitney Birenbaum				Y

COMMENTS

RESPONSES



TUNNEL PETITION

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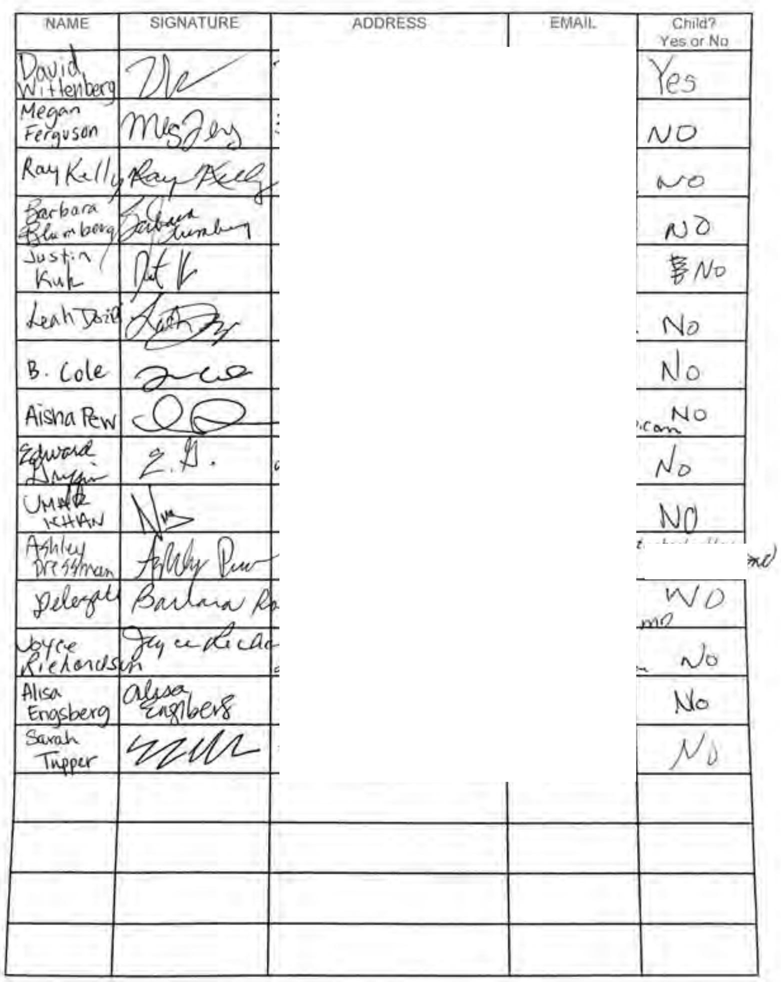
Thank You!!!
Eliyah (age 10) and Shamir (age 8)

NAME	SIGNATURE	ADDRESS	EMAIL	Child? Yes or No
Bonnie Guralnick	Bonnie Guralnick			no
Shami	Shamir Burg			yes
Eliyah	Eliyah			yes
Kathleen				no
Kim Govern				NO
Elaine Weiss	E Weiss			no
Lisa Akcha				NO
Margaret Scott	Margaret Scott			Yes
Dan Burg				no
Alyson Bonavoglia				No

COMMENTS

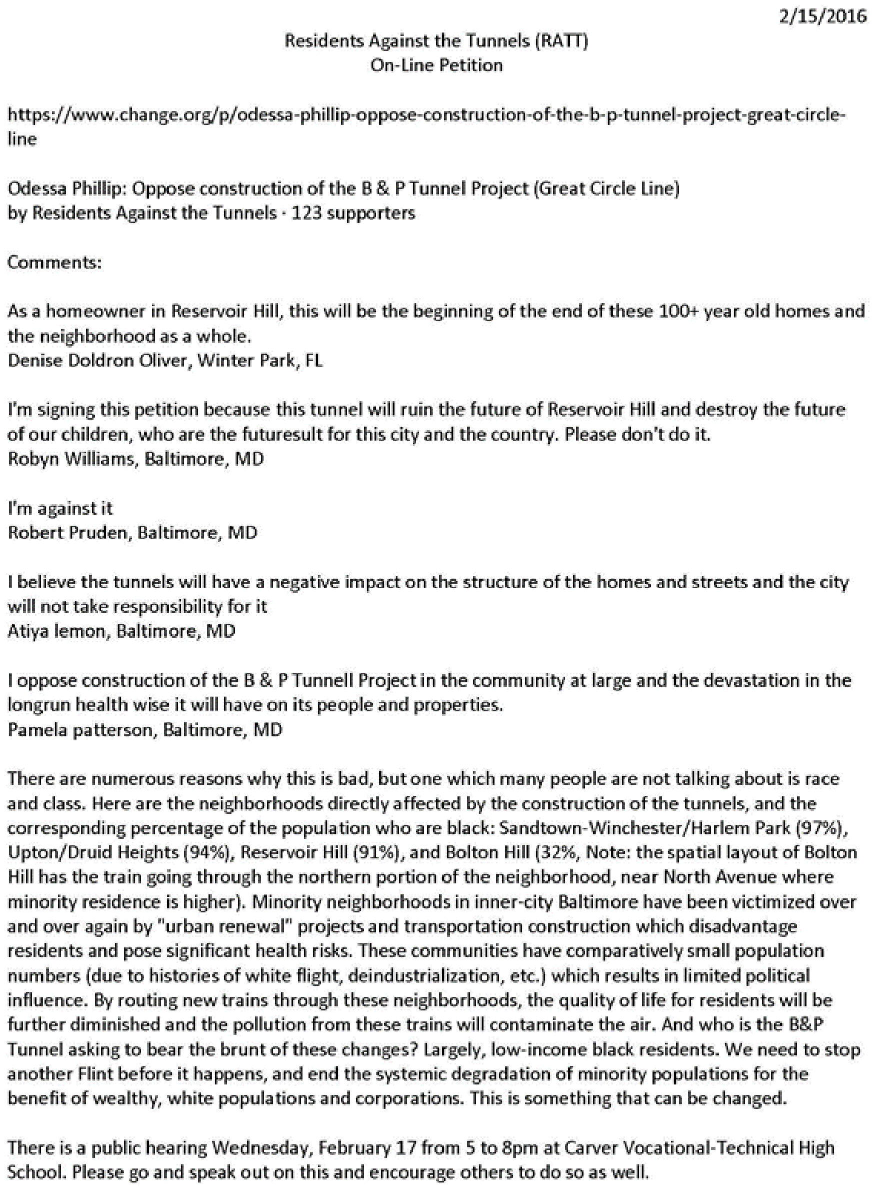
RESPONSES



NAME	SIGNATURE	ADDRESS	EMAIL	Child? Yes or No
David Wittenberg		[redacted]	[redacted]	Yes
Megan Ferguson		[redacted]	[redacted]	NO
Ray Kelly	Ray Kelly	[redacted]	[redacted]	NO
Barbara Blumberg	Barbara Blumberg	[redacted]	[redacted]	NO
Justin Kuk		[redacted]	[redacted]	NO
Leah Doza		[redacted]	[redacted]	No
B. Cole		[redacted]	[redacted]	No
Aisha Pew		[redacted]	[redacted]	NO
Edward Duggin	E. D.	[redacted]	[redacted]	No
UMAR KHAN		[redacted]	[redacted]	NO
Ashley Dressman	Ashley Pru	[redacted]	[redacted]	
Delegate	Barbara R	[redacted]	[redacted]	NO
Joyce Richardson	Joyce Richa	[redacted]	[redacted]	No
Alisa Engsberg	alisa Engsberg	[redacted]	[redacted]	No
Sarah Tupper		[redacted]	[redacted]	NO

COMMENTS

DEIS Comment 36:



2/15/2016

Residents Against the Tunnels (RATT)
On-Line Petition

https://www.change.org/p/odessa-phillip-oppose-construction-of-the-b-p-tunnel-project-great-circle-line

Odessa Phillip: Oppose construction of the B & P Tunnel Project (Great Circle Line)
by Residents Against the Tunnels · 123 supporters

Comments:

1 As a homeowner in Reservoir Hill, this will be the beginning of the end of these 100+ year old homes and the neighborhood as a whole.
Denise Doldron Oliver, Winter Park, FL

2 I'm signing this petition because this tunnel will ruin the future of Reservoir Hill and destroy the future of our children, who are the futuresult for this city and the country. Please don't do it.
Robyn Williams, Baltimore, MD

3 I'm against it
Robert Pruden, Baltimore, MD

4 I believe the tunnels will have a negative impact on the structure of the homes and streets and the city will not take responsibility for it
Atiya lemon, Baltimore, MD

5 I oppose construction of the B & P Tunnell Project in the community at large and the devastation in the longrun health wise it will have on its people and properties.
Pamela patterson, Baltimore, MD

6 There are numerous reasons why this is bad, but one which many people are not talking about is race and class. Here are the neighborhoods directly affected by the construction of the tunnels, and the corresponding percentage of the population who are black: Sandtown-Winchester/Harlem Park (97%), Upton/Druid Heights (94%), Reservoir Hill (91%), and Bolton Hill (32%, Note: the spatial layout of Bolton Hill has the train going through the northern portion of the neighborhood, near North Avenue where minority residence is higher). Minority neighborhoods in inner-city Baltimore have been victimized over and over again by "urban renewal" projects and transportation construction which disadvantage residents and pose significant health risks. These communities have comparatively small population numbers (due to histories of white flight, deindustrialization, etc.) which results in limited political influence. By routing new trains through these neighborhoods, the quality of life for residents will be further diminished and the pollution from these trains will contaminate the air. And who is the B&P Tunnel asking to bear the brunt of these changes? Largely, low-income black residents. We need to stop another Flint before it happens, and end the systemic degradation of minority populations for the benefit of wealthy, white populations and corporations. This is something that can be changed.

There is a public hearing Wednesday, February 17 from 5 to 8pm at Carver Vocational-Technical High School. Please go and speak out on this and encourage others to do so as well.

RESPONSES

Response to Comment 1:
The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**.

Response to Comment 2:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

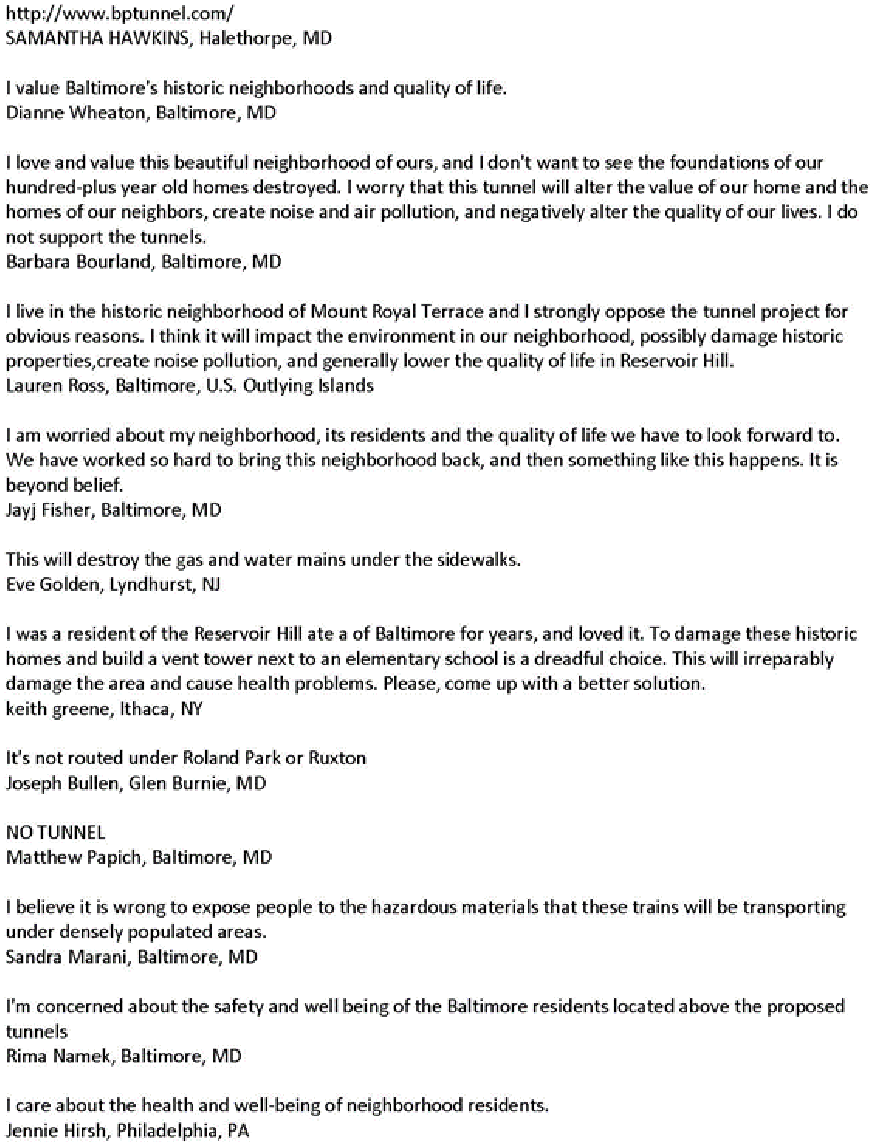
For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

Response to Comment 3:
Thank you for your comment.

Response to Comment 4:
For information about potential Project impacts on the community, please see Response to Comment 2.

Response to Comment 5:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

COMMENTS



http://www.bptunnel.com/
SAMANTHA HAWKINS, Halethorpe, MD

7 I value Baltimore's historic neighborhoods and quality of life.
Dianne Wheaton, Baltimore, MD

8 I love and value this beautiful neighborhood of ours, and I don't want to see the foundations of our hundred-plus year old homes destroyed. I worry that this tunnel will alter the value of our home and the homes of our neighbors, create noise and air pollution, and negatively alter the quality of our lives. I do not support the tunnels.
Barbara Bourland, Baltimore, MD

9 I live in the historic neighborhood of Mount Royal Terrace and I strongly oppose the tunnel project for obvious reasons. I think it will impact the environment in our neighborhood, possibly damage historic properties,create noise pollution, and generally lower the quality of life in Reservoir Hill.
Lauren Ross, Baltimore, U.S. Outlying Islands

10 I am worried about my neighborhood, its residents and the quality of life we have to look forward to. We have worked so hard to bring this neighborhood back, and then something like this happens. It is beyond belief.
Jayj Fisher, Baltimore, MD

11 This will destroy the gas and water mains under the sidewalks.
Eve Golden, Lyndhurst, NJ

12 I was a resident of the Reservoir Hill ate a of Baltimore for years, and loved it. To damage these historic homes and build a vent tower next to an elementary school is a dreadful choice. This will irreparably damage the area and cause health problems. Please, come up with a better solution.
keith greene, Ithaca, NY

13 It's not routed under Roland Park or Ruxton
Joseph Bullen, Glen Burnie, MD

14 NO TUNNEL
Matthew Papich, Baltimore, MD

15 I believe it is wrong to expose people to the hazardous materials that these trains will be transporting under densely populated areas.
Sandra Marani, Baltimore, MD

16 I'm concerned about the safety and well being of the Baltimore residents located above the proposed tunnels
Rima Namek, Baltimore, MD

17 I care about the health and well-being of neighborhood residents.
Jennie Hirsh, Philadelphia, PA

RESPONSES

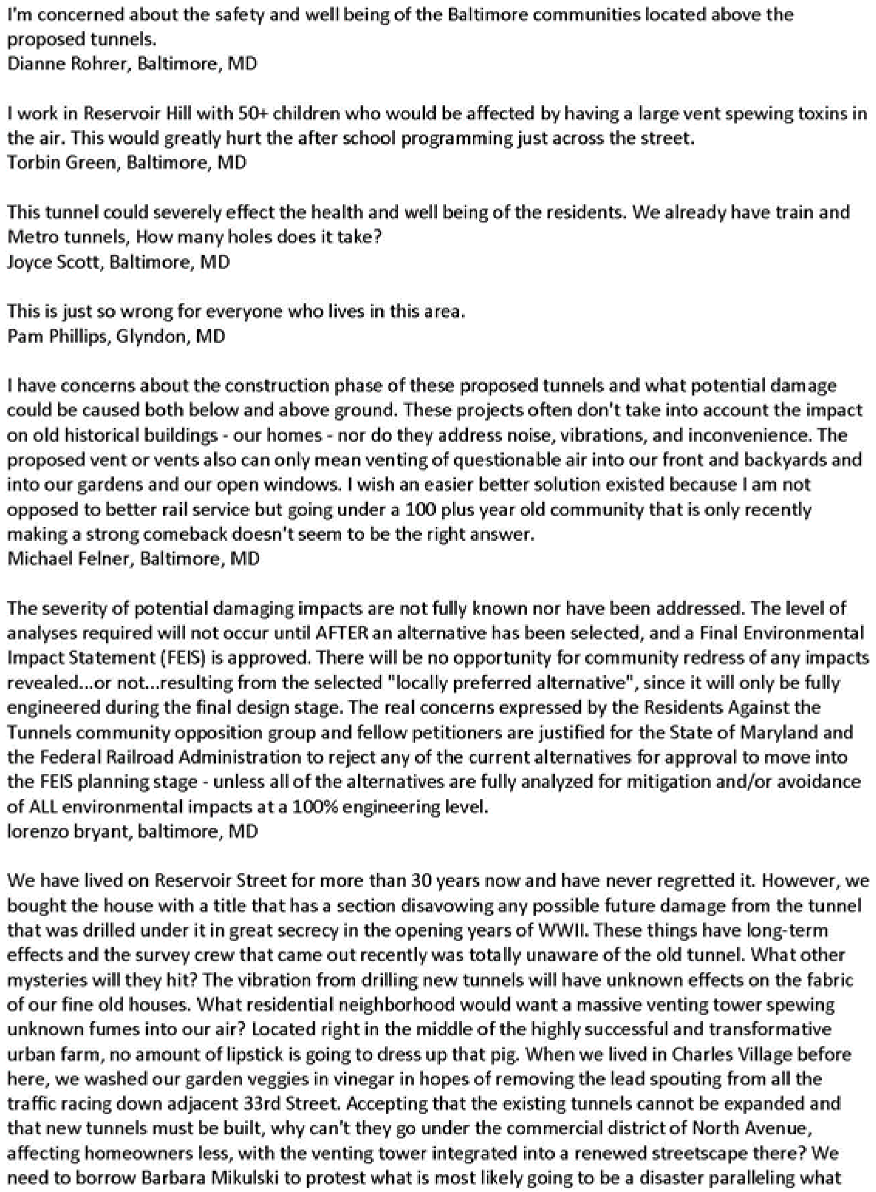
Response to Comment 6:
Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of Transportation's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

The B&P Project Team has performed an Environmental Justice (EJ) analysis consistent with EO 12898 and subsequent USDOT Orders. A critical component of the EO on environmental justice is public outreach. The Project Team has engaged extensively with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held with local officials; public, local, and regional organizations; government agencies; and representatives of affected EJ communities along the evaluated alternative alignment. Three Public Open Houses, as well as ten community meetings, have been held where the public was given the opportunity to learn about the project development in-person, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings. Additionally, the Project Team attended meetings at the request of the following organizations: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter's Clavier Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School.

Direct mailings to residents in the Study Area included property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The Project website continues to post meeting notices, Project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship, and other organizations.

The Project Team studied community composition in the areas affected by the build alternatives. It reviewed data from the American Community Survey 2009-2013 for minority and low-income populations, the National Center for Educational Statistics, government-assisted housing programs, historical references, city officials, field visits, and community meetings. From this information, the Project Team learned that of the 77 Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS.

COMMENTS



18 I'm concerned about the safety and well being of the Baltimore communities located above the proposed tunnels.
Dianne Rohrer, Baltimore, MD

19 I work in Reservoir Hill with 50+ children who would be affected by having a large vent spewing toxins in the air. This would greatly hurt the after school programming just across the street.
Torbin Green, Baltimore, MD

20 This tunnel could severely effect the health and well being of the residents. We already have train and Metro tunnels, How many holes does it take?
Joyce Scott, Baltimore, MD

21 This is just so wrong for everyone who lives in this area.
Pam Phillips, Glyndon, MD

22 I have concerns about the construction phase of these proposed tunnels and what potential damage could be caused both below and above ground. These projects often don't take into account the impact on old historical buildings - our homes - nor do they address noise, vibrations, and inconvenience. The proposed vent or vents also can only mean venting of questionable air into our front and backyards and into our gardens and our open windows. I wish an easier better solution existed because I am not opposed to better rail service but going under a 100 plus year old community that is only recently making a strong comeback doesn't seem to be the right answer.
Michael Felner, Baltimore, MD

23 The severity of potential damaging impacts are not fully known nor have been addressed. The level of analyses required will not occur until AFTER an alternative has been selected, and a Final Environmental Impact Statement (FEIS) is approved. There will be no opportunity for community redress of any impacts revealed...or not...resulting from the selected "locally preferred alternative", since it will only be fully engineered during the final design stage. The real concerns expressed by the Residents Against the Tunnels community opposition group and fellow petitioners are justified for the State of Maryland and the Federal Railroad Administration to reject any of the current alternatives for approval to move into the FEIS planning stage - unless all of the alternatives are fully analyzed for mitigation and/or avoidance of ALL environmental impacts at a 100% engineering level.
lorenzo bryant, baltimore, MD

24 We have lived on Reservoir Street for more than 30 years now and have never regretted it. However, we bought the house with a title that has a section disavowing any possible future damage from the tunnel that was drilled under it in great secrecy in the opening years of WWII. These things have long-term effects and the survey crew that came out recently was totally unaware of the old tunnel. What other mysteries will they hit? The vibration from drilling new tunnels will have unknown effects on the fabric of our fine old houses. What residential neighborhood would want a massive venting tower spewing unknown fumes into our air? Located right in the middle of the highly successful and transformative urban farm, no amount of lipstick is going to dress up that pig. When we lived in Charles Village before here, we washed our garden veggies in vinegar in hopes of removing the lead spouting from all the traffic racing down adjacent 33rd Street. Accepting that the existing tunnels cannot be expanded and that new tunnels must be built, why can't they go under the commercial district of North Avenue, affecting homeowners less, with the venting tower integrated into a renewed streetscape there? We need to borrow Barbara Mikulski to protest what is most likely going to be a disaster paralleling what

RESPONSES

Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations. For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings.

As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be underground which would reduce the overall impact to the communities. The Project sponsor will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project sponsor will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

Response to Comment 7:
Thank you for your comment.

Response to Comment 8:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

COMMENTS

almost happened to Fells Point decades ago. Many people have invested their lives in this neighborhood and it is now on a healthy upswing. The future will surely condemn the planners and politicians who might force this folly through. It must be stopped, if not to save their reputations in history, in order to save our homes and beautiful neighborhood.
Larry Schaaf, Baltimore, MD

25 The proposed tunnels would run directly under my house. Residents of 21217 area live in a section of the City that is plagued by the worst deterrents of health and social disparities.Placing these tunnels here would increase health disparities tremendously. Additionally,
Sandra Haskett, Baltimore, MD

26 I'm against the tunnel project running through my neighborhood. Run it through "Bolton Hill". That was a proposed site. What ever reasons those residents didn't want it in their community are the same reasons that I don't want it in mine. Those 4 proposed tunnels run DIRECTLY.....DIRECTLY under my house. My well is well over 100 YEARS OLD!!!! I don't know what damages can occur to MY HOME during construction. I don't need the noise nor the vibration of the construction or the vibrations from the additional trains that are proposed to use those tunnels. .....and that monstrosity of an air-vent that is also proposed I'm also opposed! Who needs that eye-sore in their neighborhood; with that additional noise.........what about the pollution from that exhaust and/or the hazardous vapors from some of the hazardous materials that the additional freight trains WILL BE CARRYING. How come those projects aren't being constructed in GUILFORD, ROLAND PARK, MT. WASHINGTON, DULANEY VALLEY!! It's awfully funny that the area for these proposed tunnels are predominantly BLACK! What about that tunnel accident that occurred a few years back? Who wants the possibility of that in occurring in their neighborhood. Take your tunnel project out in the county somewhere!
Paul Chalmus, Baltimore, MD

27 I'm signing because I am a home owner in this neighborhood and I value the community.
Lynell Sanderson, Baltimore, MD

28 I am very concerned with the impact on this residential neighborhood.
Martin Cadogan, Baltimore, MD

29 I am against running tunnels under Reservoir Hill. There are better options that won't disrupt neighborhoods.
Helen Beckstrom, Baltimore, MD

30 I'm signing because, I don't want the tunnels running through my neighborhood as I believe it will be a health hazard a noise hazard among various other things
Richard Pazornik, Baltimore, MD

31 I am directly affected as I live in the neighborhood that will feel the most impact. This project along with the changes the Department of Water and Power are doing to the Reservoir negatively impact a neighborhood that is getting back on its feet. With the proposed treatment facility on Druid Hill Dr. between Brookfield and Lakeview and the Vent Plant across the street from Whitelock farms - it will cause additional residents and potential residents to rethink their choice to live in the neighborhood. The Vent plant will negatively impact Whitelock farms just when they have acquired access to that parcel to farm on it. This amenity serves more than just the immediate neighborhood. I hope that Big Bro. listens to the people this time.

RESPONSES

The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

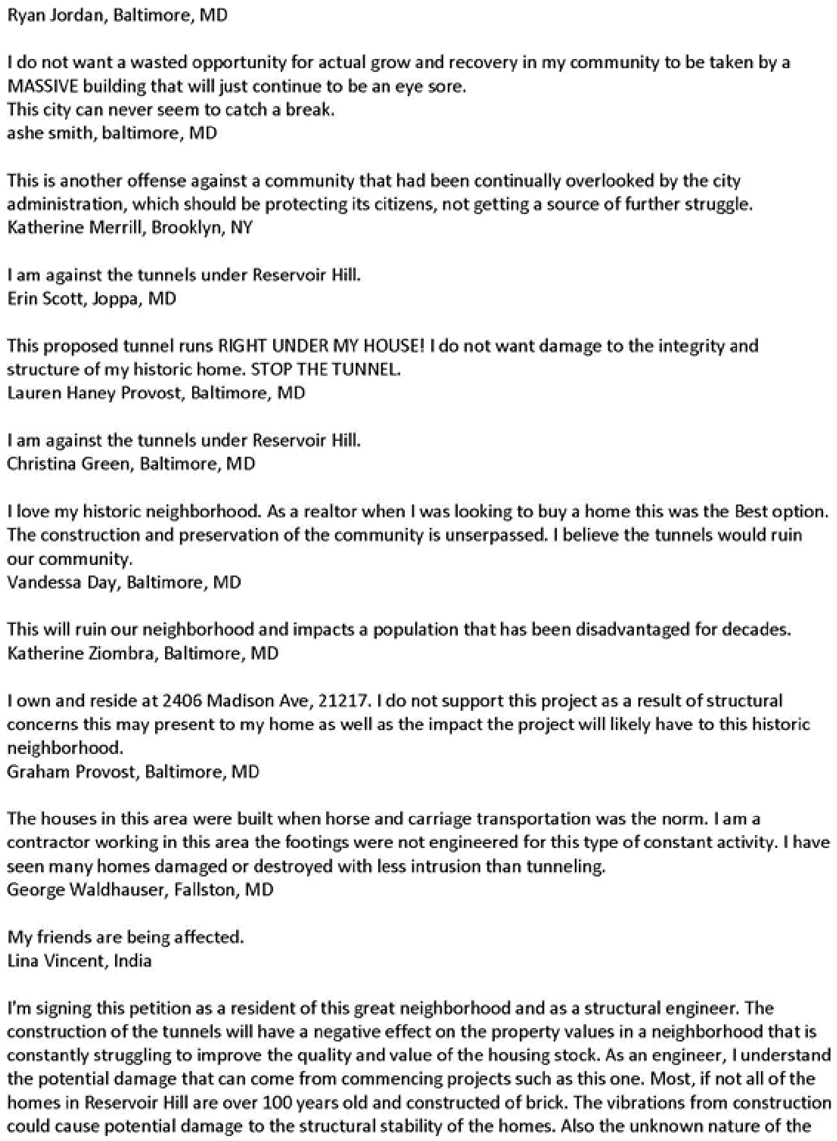
The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am to 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**.

Response to Comment 9:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-

COMMENTS



Ryan Jordan, Baltimore, MD

32 I do not want a wasted opportunity for actual grow and recovery in my community to be taken by a MASSIVE building that will just continue to be an eye sore.
This city can never seem to catch a break.
ashe smith, baltimore, MD

33 This is another offense against a community that had been continually overlooked by the city administration, which should be protecting its citizens, not getting a source of further struggle.
Katherine Merrill, Brooklyn, NY

34 I am against the tunnels under Reservoir Hill.
Erin Scott, Joppa, MD

35 This proposed tunnel runs RIGHT UNDER MY HOUSE! I do not want damage to the integrity and structure of my historic home. STOP THE TUNNEL.
Lauren Haney Provost, Baltimore, MD

36 I am against the tunnels under Reservoir Hill.
Christina Green, Baltimore, MD

37 I love my historic neighborhood. As a realtor when I was looking to buy a home this was the Best option. The construction and preservation of the community is unserpassed. I believe the tunnels would ruin our community.
Vandessa Day, Baltimore, MD

38 This will ruin our neighborhood and impacts a population that has been disadvantaged for decades.
Katherine Ziombra, Baltimore, MD

39 I own and reside at 2406 Madison Ave, 21217. I do not support this project as a result of structural concerns this may present to my home as well as the impact the project will likely have to this historic neighborhood.
Graham Provost, Baltimore, MD

40 The houses in this area were built when horse and carriage transportation was the norm. I am a contractor working in this area the footings were not engineered for this type of constant activity. I have seen many homes damaged or destroyed with less intrusion than tunneling.
George Waldhauser, Fallston, MD

41 My friends are being affected.
Lina Vincent, India

42 I'm signing this petition as a resident of this great neighborhood and as a structural engineer. The construction of the tunnels will have a negative effect on the property values in a neighborhood that is constantly struggling to improve the quality and value of the housing stock. As an engineer, I understand the potential damage that can come from commencing projects such as this one. Most, if not all of the homes in Reservoir Hill are over 100 years old and constructed of brick. The vibrations from construction could cause potential damage to the structural stability of the homes. Also the unknown nature of the

RESPONSES

construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

For information on environmental impact, please see Response to Comment 2.

The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

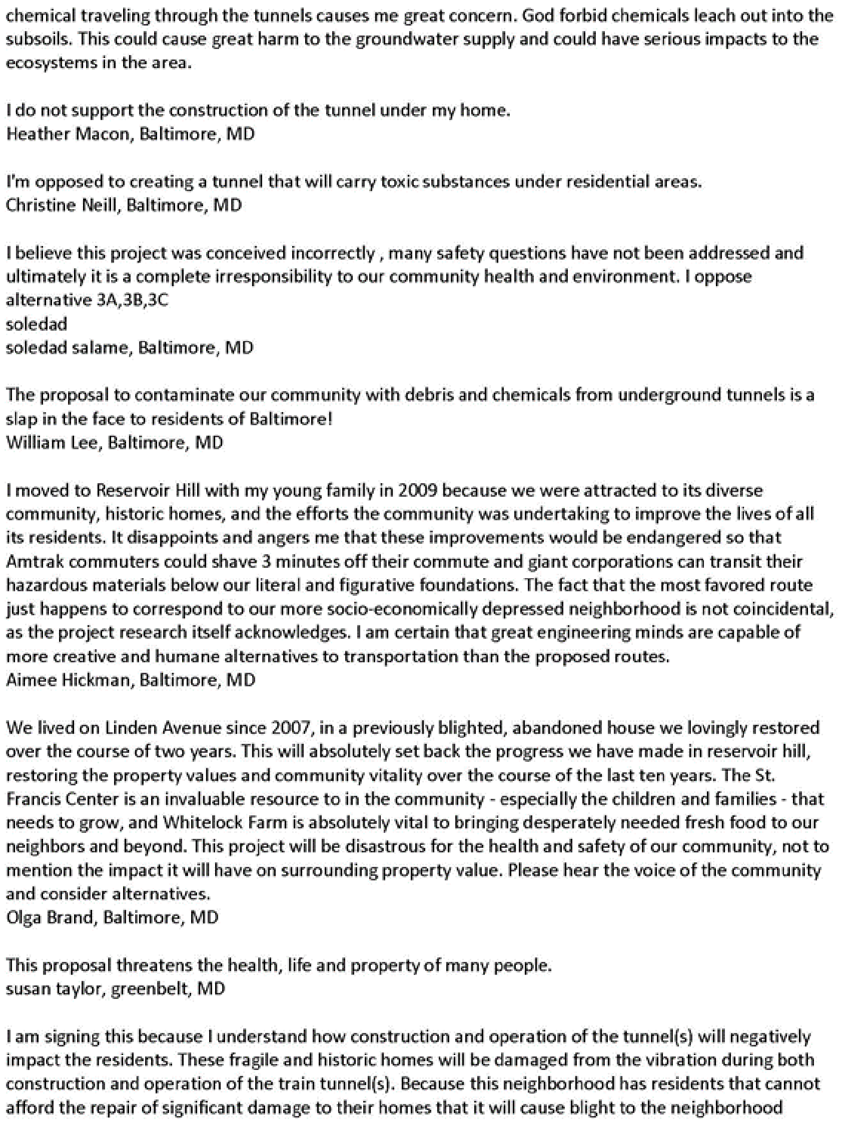
Response to Comment 10:
Thank you for your comment.

Response to Comment 11:
Utility relocations requires effort to remove, handle, and dispose of materials. Since construction of the build alternatives would cause major utility relocations that would extend significant distances outside of the tunnel portal areas, utility locations would be identified as the Project advances and relocations would take place to permit the reconstruction to advance as quickly as possible with minimal inconvenience to those living adjacent to the work areas.

Response to Comment 12:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock

COMMENTS



chemical traveling through the tunnels causes me great concern. God forbid chemicals leach out into the subsoils. This could cause great harm to the groundwater supply and could have serious impacts to the ecosystems in the area.

43 I do not support the construction of the tunnel under my home.
Heather Macon, Baltimore, MD

44 I'm opposed to creating a tunnel that will carry toxic substances under residential areas.
Christine Neill, Baltimore, MD

45 I believe this project was conceived incorrectly , many safety questions have not been addressed and ultimately it is a complete irresponsibility to our community health and environment. I oppose alternative 3A,3B,3C
soledad
soledad salame, Baltimore, MD

46 The proposal to contaminate our community with debris and chemicals from underground tunnels is a slap in the face to residents of Baltimore!
William Lee, Baltimore, MD

47 I moved to Reservoir Hill with my young family in 2009 because we were attracted to its diverse community, historic homes, and the efforts the community was undertaking to improve the lives of all its residents. It disappoints and angers me that these improvements would be endangered so that Amtrak commuters could shave 3 minutes off their commute and giant corporations can transit their hazardous materials below our literal and figurative foundations. The fact that the most favored route just happens to correspond to our more socio-economically depressed neighborhood is not coincidental, as the project research itself acknowledges. I am certain that great engineering minds are capable of more creative and humane alternatives to transportation than the proposed routes.
Aimee Hickman, Baltimore, MD

48 We lived on Linden Avenue since 2007, in a previously blighted, abandoned house we lovingly restored over the course of two years. This will absolutely set back the progress we have made in reservoir hill, restoring the property values and community vitality over the course of the last ten years. The St. Francis Center is an invaluable resource to in the community - especially the children and families - that needs to grow, and Whitelock Farm is absolutely vital to bringing desperately needed fresh food to our neighbors and beyond. This project will be disastrous for the health and safety of our community, not to mention the impact it will have on surrounding property value. Please hear the voice of the community and consider alternatives.
Olga Brand, Baltimore, MD

49 This proposal threatens the health, life and property of many people.
susan taylor, greenbelt, MD

50 I am signing this because I understand how construction and operation of the tunnel(s) will negatively impact the residents. These fragile and historic homes will be damaged from the vibration during both construction and operation of the train tunnel(s). Because this neighborhood has residents that cannot afford the repair of significant damage to their homes that it will cause blight to the neighborhood

RESPONSES

Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

Response to Comment 13:
Thank you for your comment.

Response to Comment 14:
Thank you for your comment.

Response to Comment 15:
NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for

COMMENTS

50 already at risk. The number of trains estimated to use the tunnel(s) will cause almost constant low frequency vibration which will be very destructive to the fragile homes.
Mark Reinhart, Charles Town, WV

51 This project endangers our safety, structural stability, air quality, and kills the heart of our neighborhood. It is also a dishonest presentation focusing on passenger service and minimizing or denying the freight aspect.
Laura Amlie, Baltimore, MD

52 FIRST, we see the proposed project as a clear example of an abuse of social justice.
- The routing of these trains clearly targets poor and minority neighborhoods and avoids more affluent neighborhoods.

SECONDLY, My neighbors and I rely on our homes as a major element of our financial security.
- We believe this project will seriously devalue our properties and take money from all Reservoir Hill residents who have worked long and hard to make our neighborhood a desirable place to live.

THIRDLY, Our homes are directly above the tunnel pathways the average home is 100 years old. They are built of soft, low-fire bricks, limestone, sandstone and marble are quite FRAGILE.
- Every resident will verify that our houses all shake every time a truck or buss pass by.
- We fear that we will experience irreversible damage , first from the construction vibration, then from the long term deterioration from the 338 trains that are estimated to pass under our homes every day?

FOURTH , We need a list of exactly what hazardous, toxic, flammable and explosive materials may be passing through the tunnels?
- And, given the history of disasters in Baltimore's existing tunnels, with only two frieght trains a day, how many emergencies are predicted when, by 2040, traffic is increased to 338 trains a day?

FIFTH, If the tunnels are 2 mile long and we multiply those 338 trains running through them daily by two, this equates to generating a toxic cloud from 776 miles worth of diesel exhaust every day.
- A major portion of this dangerous cloud will be discharged, through the Whitelock street vent.
- The footprint of the gigantic vent building, located in the very heart of our neighborhood will destroy most of our much- loved, neighborhood center, park and farm.
- The vent will be like a gigantic, noisy, exhaust pipe that will overshadow & overcloud all Reservoir Hill.
- The emissions will compromise air quality , especially for the nearby John Eager Howard Elementary School, St. Francis Neighborhood Center and the historic Gertrude Stein Retreat house

SIXTH, What steps are being taken to ensure that the vent meets all relevant air quality and human health and safety standards?
- What constant air quality monitoring signs, and emergency alarm systems will be put in place to inform and protect us?

We have submitted a more complete printed list of questions, NONE of these questions have been answered to our satisfaction.

IN SUMMATION, While we fear that the air quality of this vent may physically erode the structures of our existing homes, we fear even more what the construction of this project will do to our sense of security, to our physical health, and to the community we have worked so hard to create.

RESPONSES

specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Response to Comment 16:
Thank you for your comment.

Response to Comment 17:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

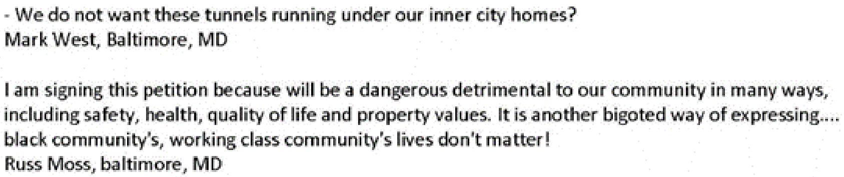
Response to Comment 18:
Thank you for your comment.

Response to Comment 19:
Chapter VI of this FEIS specifically reviewed Air Quality, Water, Soil, and Hazardous Material impacts on Children's Health. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of $NO_{x,}$ VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

Response to Comment 20:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

Response to Comment 21:
Thank you for your comment.

COMMENTS



- We do not want these tunnels running under our inner city homes?
Mark West, Baltimore, MD

53 I am signing this petition because will be a dangerous detrimental to our community in many ways, including safety, health, quality of life and property values. It is another bigoted way of expressing.... black community's, working class community's lives don't matter!
Russ Moss, baltimore, MD

RESPONSES

Response to Comment 22:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take

COMMENTS	RESPONSES

place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

Response to Comment 23:
For information regarding potential environmental impacts, please see response to Comment 2.

The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

Please see **DEIS Comment #34** for the Residents Against the Tunnel (RATT) official comment and response.

COMMENTS	RESPONSES

The Project has undergone a detailed Alternatives Analysis as part of the Environmental Impact Statement process. As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Response to Comment 24:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within

COMMENTS	RESPONSES
	acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling. The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**. A total of 16 preliminary alternatives were identified in the B&P Tunnel Project process. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative. As described in **Chapter III** of the FEIS, the the build alternatives would require three ventilation facilities in order to meet current safety industry standards (NFPA 130) for projected NEC FUTURE train demand headway, and to ensure proper ventilation of the proposed tunnels. The purpose of the ventilation facility is to pull fresh air into the tunnel and ventilate the tunnel air to the outside. One ventilation facility will be located at the south portal, and another will be located 300-600 feet from the north portal. A third ventilation facility would be located at street level, connected to the bored portion of the tunnels by a vertical shaft and connecting tunnel (plenum), splitting the proposed tunnel into two unequal lengths. The Intermediate Ventilation Facility would consist of a building, approximately 100 feet by 200 feet in plan with a maximum height of 60 feet. **Response to Comment 25:** No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns. For information regarding disparate impact and environmental justice communities, please see Comment 6. **Response to Comment 26:** No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water.

COMMENTS

RESPONSES

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

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Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA *'frequent'* impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take

COMMENTS	RESPONSES
	place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/sec., which is a generally accepted building damage threshold. All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.** The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**. The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling. For information regarding freight trains and hazardous material, please see Response to Comment 15. For information regarding disparate impact and environmental justice communities, please see Comment 6. **Response to Comment 27:** Thank you for your comment. **Response to Comment 28:** Thank you for your comment.

COMMENTS

RESPONSES

Response to Comment 29:
Thank you for your comment.

Response to Comment 30:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

Response to Comment 31:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Response to Comment 32:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce

COMMENTS	RESPONSES

environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 33:
For information regarding disparate impact and environmental justice communities, please see Comment 6.

Response to Comment 34:
Thank you for your comment.

Response to Comment 35:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

Response to Comment 36:
Thank you for your comment.

Response to Comment 37:
Thank you for your comment.

Response to Comment 38:
For information regarding disparate impact and environmental justice communities, please see Comment 6.

Response to Comment 39:
For information on the impact of vibration on foundations of both historic and modern homes, please see Response to Comment 35.

COMMENTS

RESPONSES

For information regarding impacts to the Historic District, please see Comment 1.

Response to Comment 40:
For information on the impact of vibration on foundations of both historic and modern homes, please see Response to Comment 35.

Response to Comment 41:
Thank you for your comment.

Response to Comment 42:
The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

For information on the impact of vibration on foundations of both historic and modern homes, please see Response to Comment 4.

For information regarding freight trains and hazardous material, please see Response to Comment 15.

No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water.

Response to Comment 43:
Thank you for your comment.

Response to Comment 44:
For information regarding freight trains and hazardous material, please see Response to Comment 15.

Response to Comment 45:
For information regarding freight trains, hazardous material, and safety, please see Response to Comment 15.

No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns. For information regarding potential Environmental Impacts, please see Comment 2.

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Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

Response to Comment 46:
For information regarding freight trains and hazardous material, please see Response to Comment 15.

No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

Response to Comment 47:
Rail service improvements are detailed within the FEIS; furthermore, while improving rail service is a goal of the Project, it is not the sole reason the Project was initiated. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

For information regarding disparate impact and environmental justice communities, please see Comment 6.

A total of 16 preliminary alternatives were identified in the B&P Tunnel Project process. **Chapter III** of the FEIS details the basis of elimination or retention for each Alternative.

Response to Comment 48:
The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS

RESPONSES

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

Response to Comment 49:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

For information regarding potential Environmental Impacts, please see Comment 2.

Response to Comment 50:
For information on the impact of vibration on foundations of both historic and modern homes (as well as planned mitigation for impacts), please see Response to Comment 35.

Response to Comment 51:
To minimize risk to the public, FRA requires a range of measures, including emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA).

Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project

COMMENTS	RESPONSES
	Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2. The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am to 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**. For information regarding potential Environmental Impacts, please see Comment 2. The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.** **Response to Comment 52:** For information regarding disparate impact and environmental justice communities, please see Comment 6. The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS

RESPONSES

For information on the impact of vibration on foundations of both historic and modern homes (as well as planned mitigation for impacts), please see Response to Comment 4.

To minimize risk to the public, FRA requires a range of measures, including emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA). Emergency access/egress for pedestrians would be accomplished via emergency exits no farther than 2,500 feet apart or cross-passages between tunnels every 800 feet or less, or in some situations, a combination of both. For the Preferred Alternative, three locations would be provided for emergency egress to the surface, working with cross-passages in the tunnels. The emergency egress to ground level would be provided at the south portal Ventilation Facility, via the Intermediate Ventilation Facility, and at the north portal Ventilation Facility.

The ventilation facilities would be an essential Life/Safety component of the build alternatives, beyond their function of providing emergency access/egress for the tunnels. The ventilation facilities would include an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, and silencers and dampers. In the unlikely event of a fire, smoke could emerge from the vents, as is the case with any structural fire. The ventilation facilities and fans are built so that smoke emerging from the tunnel would be projected up and away from the community.-In the very rare event of a tunnel fire, the path from a tunnel fire to the exhaust louvers is long and circuitous, with many bends that reduce the ability of particles to travel through the fans and louvers.

Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that

COMMENTS

RESPONSES

corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Analysis of ventilation plant emissions included an air dispersion modeling analysis, which followed the latest US Environmental Protection Agency modeling guidelines for predicting air quality effects for regulated pollutants. The results of the analysis were compared to the stringent 1-hour NO_2 National Ambient Air Quality Standards (NAAQS) of 100 parts per billion (ppb) as opposed to the annual standard of 53 ppb. Emission studies have demonstrated that if NO_2 concentrations are maintained within acceptable levels, then other pollutant concentrations associated with diesel exhaust emissions will also be within acceptable limits. The maximum predicted 1-hour NO_2 concentration from the three ventilation facilities as well as north and south portals was 12.8 ppb. When added to the NO_2 background concentration of 51 ppb, the total predicted 1-hour concentration amounted to 63.8 ppb, which is below the NAAQS of 100 ppb. The maximum predicted 1-hour NO_2 concentration of the intermediate ventilation plant is 2.9 ppb and when combined with NO_2 background concentration of 51 ppb the total NO_2 concentration would be 53.9 ppb, below the NAAQS threshold limits of 100 ppb.

The three ventilation plant facilities would be subject to the operational noise level standards included in the Noise Regulation of the Health Code of Baltimore City § 9-206 Noise Regulation, 2015. This regulation provides the noise limits for manufacturing, commercial, and residential zones in Baltimore City– depending on the source of noise and the types of adjacent land uses. For noise generated within residential zones, there is a limit of 55 dBA at any point on the property line of the use.

Noise levels in the immediate vicinity of the ventilation plant buildings would be caused by the continual operation of the ventilation fans within each facility. The horizontal fans would operate periodically and would generate sound that would propagate through the louvers at the top of the ventilation facilities. Fans would operate periodically when NO2 levels in the tunnel exceed a set threshold or in emergencies when smoke is present in the tunnel. NO2 levels are likely to be highest when the level of diesel locomotive operations is highest, or when congestion causes trains to operate slowly or to idle in the tunnel. However, there is not enough information currently available to determine how many hours per day, on average, the fans would run and whether or not they would run during the night.

The design standard for the ventilation facilities would limit the outdoor noise level, when the fans are in operation, to Lmax 50 dBA at the facility property lines. 50 dBA is approximately the noise produced by an indoor air conditioner at a distance of three feet.

COMMENTS

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To achieve the required reduction in noise level, cylindrical or rectangular sound attenuators would be mounted directly to each fan or to the ductwork within the system. In addition, the building itself would partially shield noise from the interior of the ventilation plant, which would further reduce noise levels outside of the building. The Preliminary Engineering Team has stated that the ventilation plant facilities, with attenuators installed, will emit noise at 45 dBA. This would meet the design standard of L_{max} 50 dBA at the facility property lines (i.e., the noise level generated would be less than the design standard).

Chapter VI of this FEIS specifically reviewed Air Quality, Water, Soil, and Hazardous Material impacts on Children's Health. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality and is not anticipated to create conditions that would adversely impact the integrity of the structures in the Study Area. The maximum 1-hour NO2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**.

No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

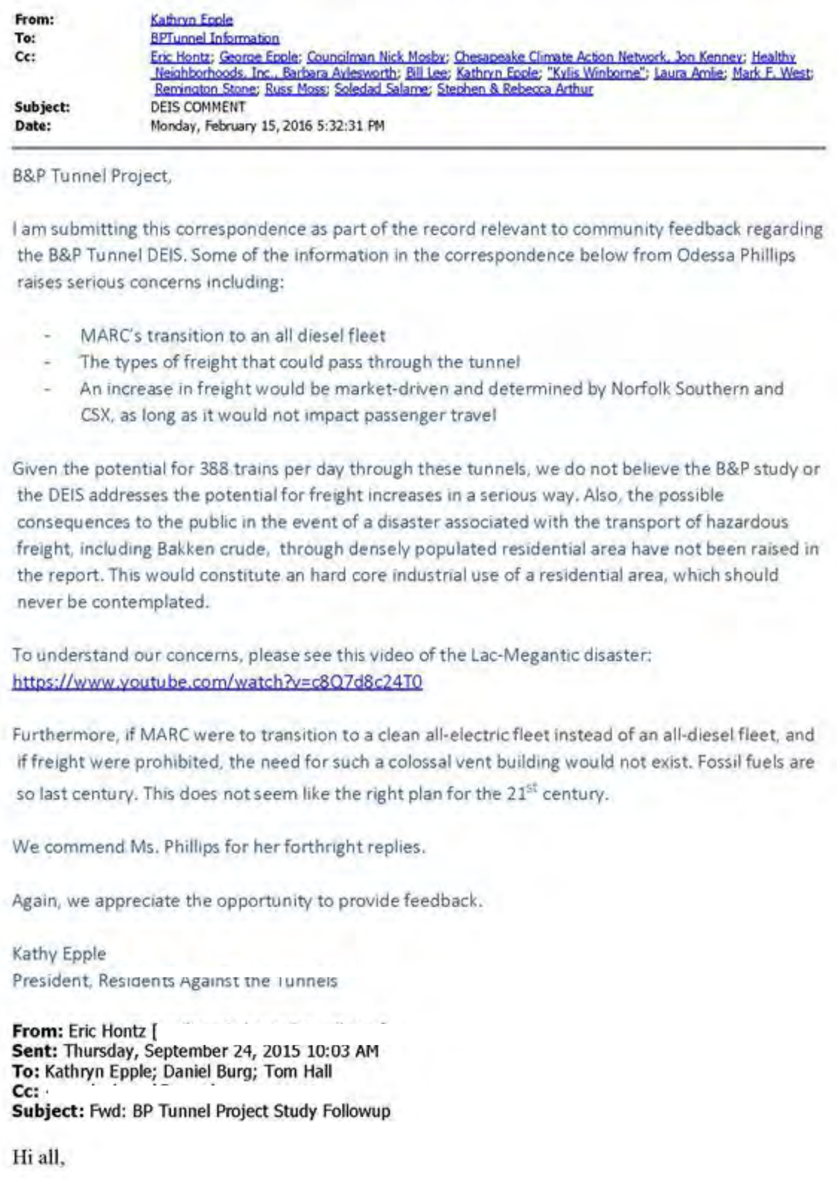
The Project meets air quality standards; therefore, public alerts regarding emissions will not be required.

Response to Comment 53:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

COMMENTS	RESPONSES
	For information regarding potential Environmental Impacts, please see Comment 2. The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community. For information regarding disparate impact and environmental justice communities, please see Comment 6.

COMMENTS

DEIS Comment 37:



From: Kathryn Epple
To: BPTunnel Information
Cc: Eric Hontz; George Epple; Councilman Nick Mosby; Chesapeake Climate Action Network, Jon Kenney; Healthy Neighborhoods, Inc., Barbara Aylesworth; Bill Lee; Kathryn Epple; "Kylis Winborne"; Laura Amlie; Mark F. West; Remington Stone; Russ Moss; Soledad Salame; Stephen & Rebecca Arthur
Subject: DEIS COMMENT
Date: Monday, February 15, 2016 5:32:31 PM

B&P Tunnel Project,

I am submitting this correspondence as part of the record relevant to community feedback regarding the B&P Tunnel DEIS. Some of the information in the correspondence below from Odessa Phillips raises serious concerns including:

- MARC's transition to an all diesel fleet
- The types of freight that could pass through the tunnel
- An increase in freight would be market-driven and determined by Norfolk Southern and CSX, as long as it would not impact passenger travel

1 Given the potential for 388 trains per day through these tunnels, we do not believe the B&P study or the DEIS addresses the potential for freight increases in a serious way. Also, the possible consequences to the public in the event of a disaster associated with the transport of hazardous freight, including Bakken crude, through densely populated residential area have not been raised in the report. This would constitute an hard core industrial use of a residential area, which should never be contemplated.

To understand our concerns, please see this video of the Lac-Megantic disaster:
https://www.youtube.com/watch?v=c8Q7d8c24T0

2 Furthermore, if MARC were to transition to a clean all-electric fleet instead of an all-diesel fleet, and if freight were prohibited, the need for such a colossal vent building would not exist. Fossil fuels are so last century. This does not seem like the right plan for the 21st century.

We commend Ms. Phillips for her forthright replies.

Again, we appreciate the opportunity to provide feedback.

Kathy Epple
President, Residents Against the Tunnels

From: Eric Hontz [[redacted]
Sent: Thursday, September 24, 2015 10:03 AM
To: Kathryn Epple; Daniel Burg; Tom Hall
Cc: [redacted]
Subject: Fwd: BP Tunnel Project Study Followup

Hi all,

RESPONSES

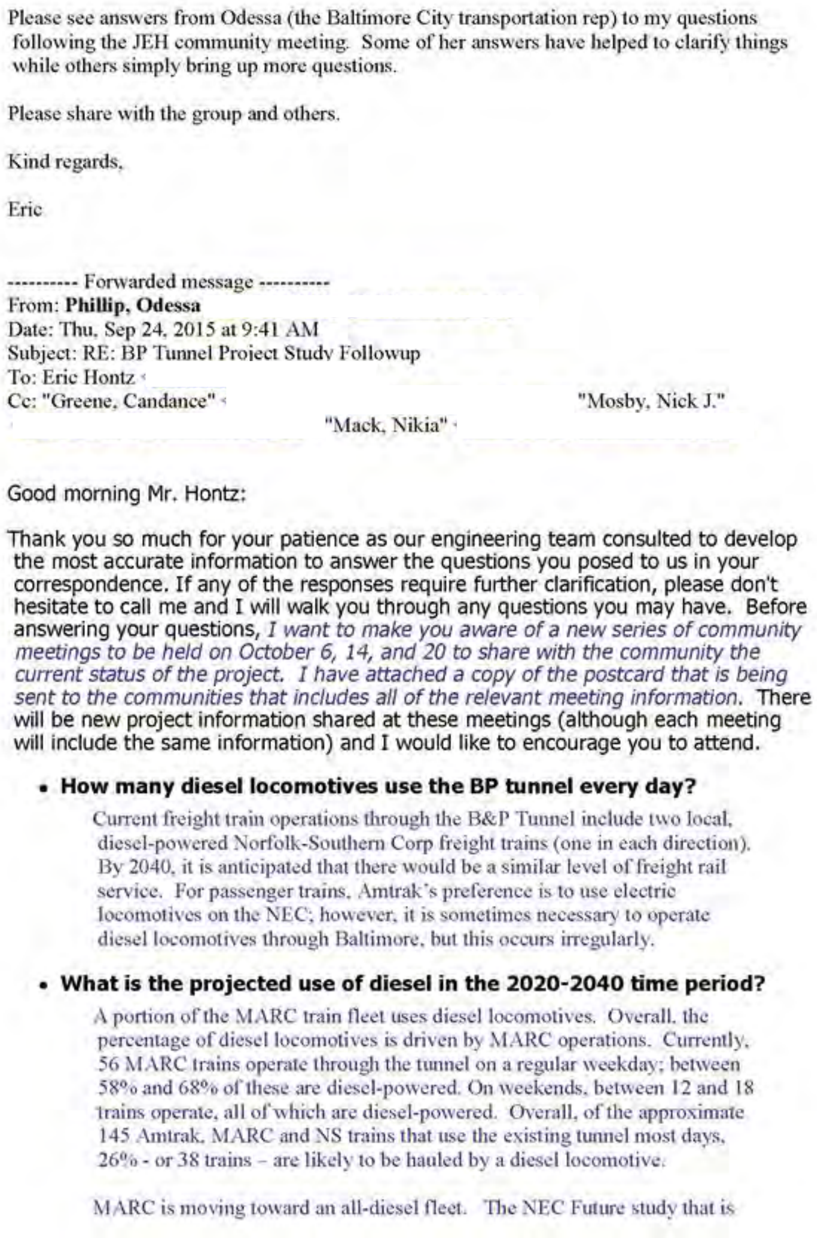
Response to Comment 1:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at https://www.fra.dot.gov/Page/P0444. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

To minimize risk to the public, FRA requires a range of measures, including emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA). Emergency access/egress for pedestrians would be accomplished via emergency exits no farther than 2,500 feet apart or cross-passages between tunnels every 800 feet or less, or in some situations, a combination of both. For the Preferred Alternative, three locations would be provided for emergency egress to the surface, working with cross-

COMMENTS



Please see answers from Odessa (the Baltimore City transportation rep) to my questions following the JEH community meeting. Some of her answers have helped to clarify things while others simply bring up more questions.

Please share with the group and others.

Kind regards,

Eric

---------- Forwarded message ----------
From: **Phillip, Odessa**
Date: Thu, Sep 24, 2015 at 9:41 AM
Subject: RE: BP Tunnel Project Study Followup
To: Eric Hontz <
Cc: "Greene, Candance" < "Mosby, Nick J."
"Mack, Nikia" <

Good morning Mr. Hontz:

Thank you so much for your patience as our engineering team consulted to develop the most accurate information to answer the questions you posed to us in your correspondence. If any of the responses require further clarification, please don't hesitate to call me and I will walk you through any questions you may have. Before answering your questions, *I want to make you aware of a new series of community meetings to be held on October 6, 14, and 20 to share with the community the current status of the project. I have attached a copy of the postcard that is being sent to the communities that includes all of the relevant meeting information.* There will be new project information shared at these meetings (although each meeting will include the same information) and I would like to encourage you to attend.

- **How many diesel locomotives use the BP tunnel every day?**

  Current freight train operations through the B&P Tunnel include two local, diesel-powered Norfolk-Southern Corp freight trains (one in each direction). By 2040, it is anticipated that there would be a similar level of freight rail service. For passenger trains, Amtrak's preference is to use electric locomotives on the NEC; however, it is sometimes necessary to operate diesel locomotives through Baltimore, but this occurs irregularly.

- **What is the projected use of diesel in the 2020-2040 time period?**

  A portion of the MARC train fleet uses diesel locomotives. Overall, the percentage of diesel locomotives is driven by MARC operations. Currently, 56 MARC trains operate through the tunnel on a regular weekday; between 58% and 68% of these are diesel-powered. On weekends, between 12 and 18 trains operate, all of which are diesel-powered. Overall, of the approximate 145 Amtrak, MARC and NS trains that use the existing tunnel most days, 26% - or 38 trains – are likely to be hauled by a diesel locomotive.

  MARC is moving toward an all-diesel fleet. The NEC Future study that is

RESPONSES

passages in the tunnels. The emergency egress to ground level would be provided at the south portal Ventilation Facility, via the Intermediate Ventilation Facility, and at the north portal Ventilation Facility.

The ventilation facilities would be an essential Life/Safety component of the build alternatives, beyond their function of providing emergency access/egress for the tunnels. The ventilation facilities would include an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, and silencers and dampers. In the unlikely event of a fire, smoke could emerge from the vents, as is the case with any structural fire. The ventilation facilities and fans are built so that smoke emerging from the tunnel would be projected up and away from the community. -In the very rare event of a tunnel fire, the path from a tunnel fire to the exhaust louvers is long and circuitous, with many bends that reduce the ability of particles to travel through the fans and louvers.

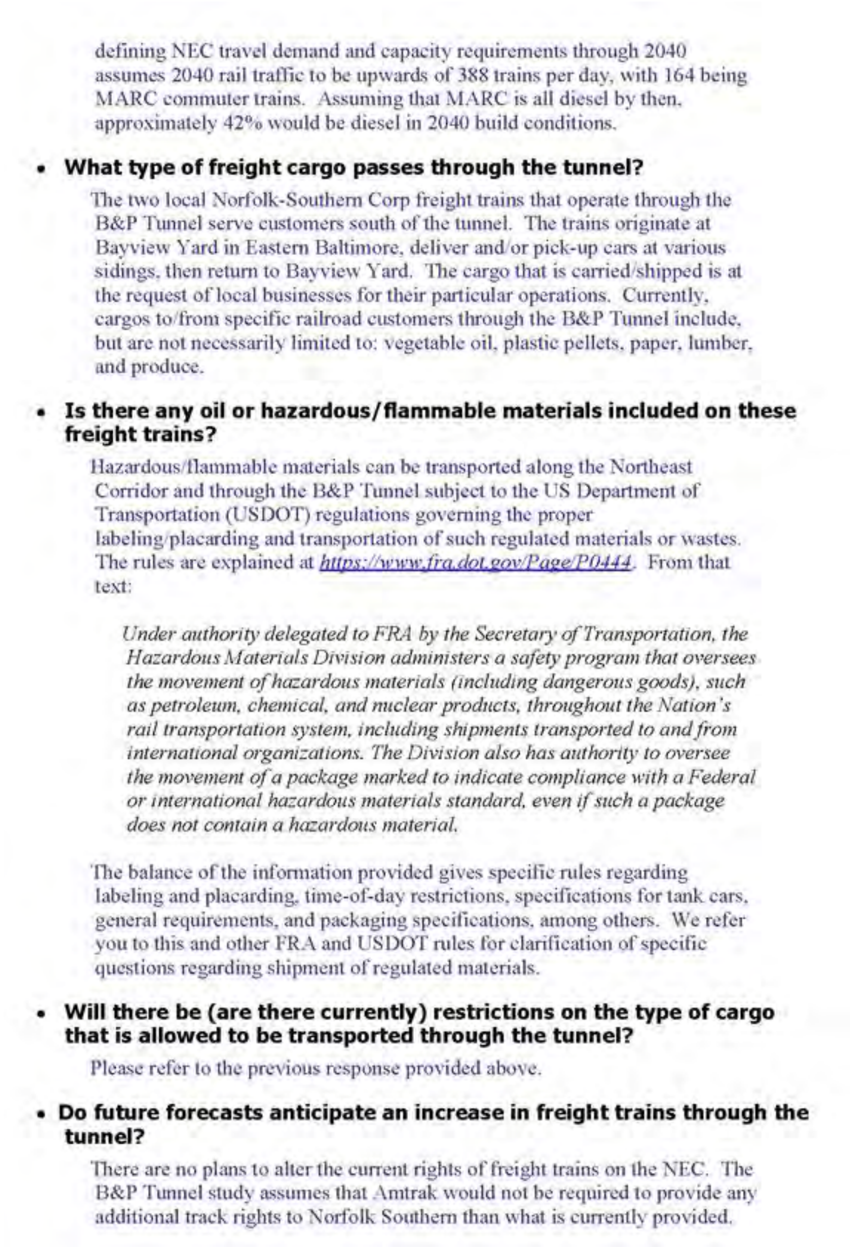
The Project has been planned mostly underground in order to avoid greater impacts to the community. Fire in a tunnel is much less damaging to a community than a fire or other emergency event on an above-ground track running through the neighborhood The new B&P Tunnel will be designed to be better equipped and prepared than the current B&P Tunnel.

Response to Comment 2:
Ventilations plants are necessary for public safety and would still be needed regardless of the type of energy used by vehicles in the tunnel. As described in **Chapter III** of the FEIS, the build alternatives would require three ventilation facilities in order to meet current safety industry standards (NFPA 130) for projected NEC FUTURE train demand headway, and to ensure proper ventilation of the proposed tunnels. The purpose of the ventilation facility is to pull fresh air into the tunnel and ventilate the tunnel air to the outside. One ventilation facility will be located at the south portal, and another will be located 300-600 feet from the north portal. A third ventilation facility would be located at street level, connected to the bored portion of the tunnels by a vertical shaft and connecting tunnel (plenum), splitting the proposed tunnel into two unequal lengths. The Intermediate Ventilation Facility would consist of a building, approximately 100 feet by 200 feet in plan with a maximum height of 60 feet.

Please see attached replies from Odessa Phillip for answers to remaining comments found in this email chain.

COMMENTS

RESPONSES



defining NEC travel demand and capacity requirements through 2040 assumes 2040 rail traffic to be upwards of 388 trains per day, with 164 being MARC commuter trains. Assuming that MARC is all diesel by then, approximately 42% would be diesel in 2040 build conditions.

- **What type of freight cargo passes through the tunnel?**

  The two local Norfolk-Southern Corp freight trains that operate through the B&P Tunnel serve customers south of the tunnel. The trains originate at Bayview Yard in Eastern Baltimore, deliver and/or pick-up cars at various sidings, then return to Bayview Yard. The cargo that is carried/shipped is at the request of local businesses for their particular operations. Currently, cargos to/from specific railroad customers through the B&P Tunnel include, but are not necessarily limited to: vegetable oil, plastic pellets, paper, lumber, and produce.

- **Is there any oil or hazardous/flammable materials included on these freight trains?**

  Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at https://www.fra.dot.gov/Page/P0444. From that text:

  > *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

  The balance of the information provided gives specific rules regarding labeling and placarding, time-of-day restrictions, specifications for tank cars, general requirements, and packaging specifications, among others. We refer you to this and other FRA and USDOT rules for clarification of specific questions regarding shipment of regulated materials.

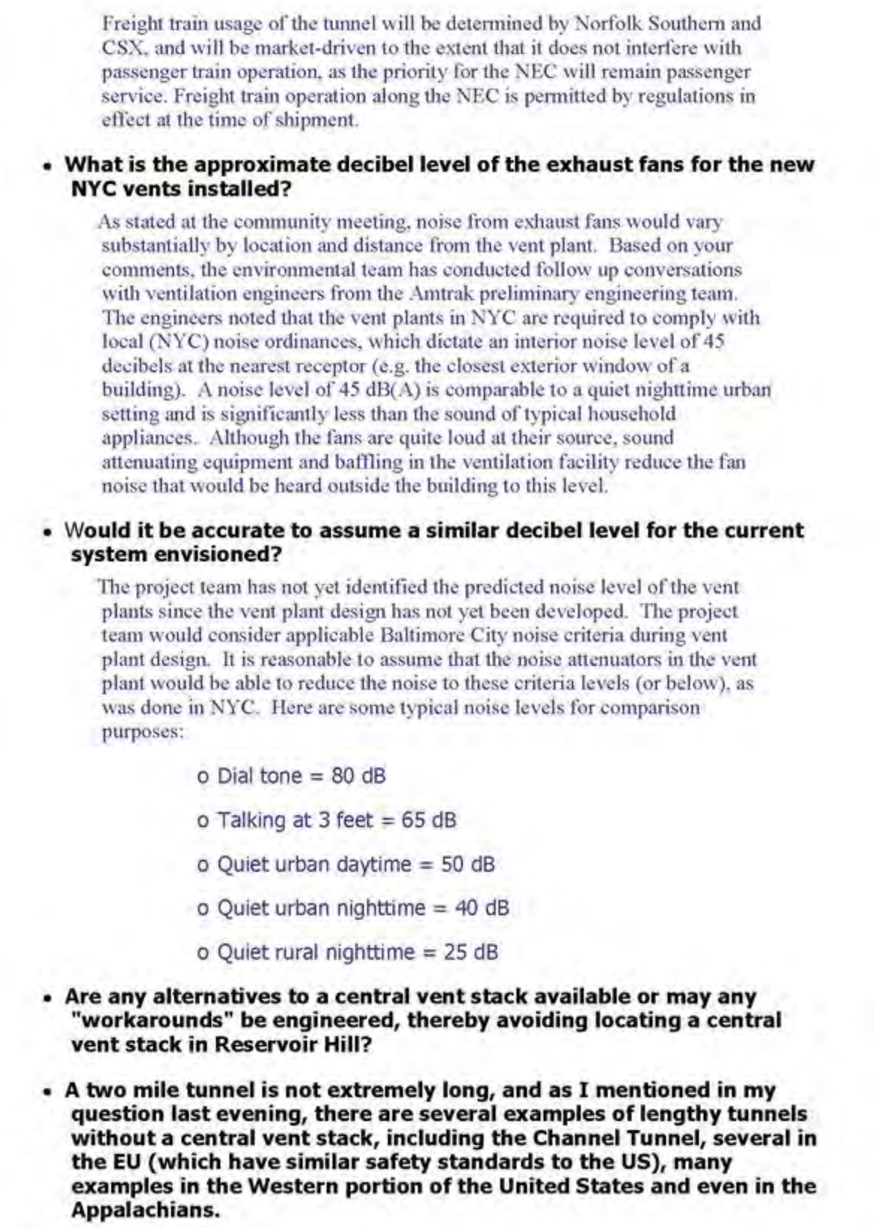
- **Will there be (are there currently) restrictions on the type of cargo that is allowed to be transported through the tunnel?**

  Please refer to the previous response provided above.

- **Do future forecasts anticipate an increase in freight trains through the tunnel?**

  There are no plans to alter the current rights of freight trains on the NEC. The B&P Tunnel study assumes that Amtrak would not be required to provide any additional track rights to Norfolk Southern than what is currently provided.

COMMENTS	**RESPONSES**



Freight train usage of the tunnel will be determined by Norfolk Southern and CSX, and will be market-driven to the extent that it does not interfere with passenger train operation, as the priority for the NEC will remain passenger service. Freight train operation along the NEC is permitted by regulations in effect at the time of shipment.

- **What is the approximate decibel level of the exhaust fans for the new NYC vents installed?**

  As stated at the community meeting, noise from exhaust fans would vary substantially by location and distance from the vent plant. Based on your comments, the environmental team has conducted follow up conversations with ventilation engineers from the Amtrak preliminary engineering team. The engineers noted that the vent plants in NYC are required to comply with local (NYC) noise ordinances, which dictate an interior noise level of 45 decibels at the nearest receptor (e.g. the closest exterior window of a building). A noise level of 45 dB(A) is comparable to a quiet nighttime urban setting and is significantly less than the sound of typical household appliances. Although the fans are quite loud at their source, sound attenuating equipment and baffling in the ventilation facility reduce the fan noise that would be heard outside the building to this level.

- **Would it be accurate to assume a similar decibel level for the current system envisioned?**

  The project team has not yet identified the predicted noise level of the vent plants since the vent plant design has not yet been developed. The project team would consider applicable Baltimore City noise criteria during vent plant design. It is reasonable to assume that the noise attenuators in the vent plant would be able to reduce the noise to these criteria levels (or below), as was done in NYC. Here are some typical noise levels for comparison purposes:

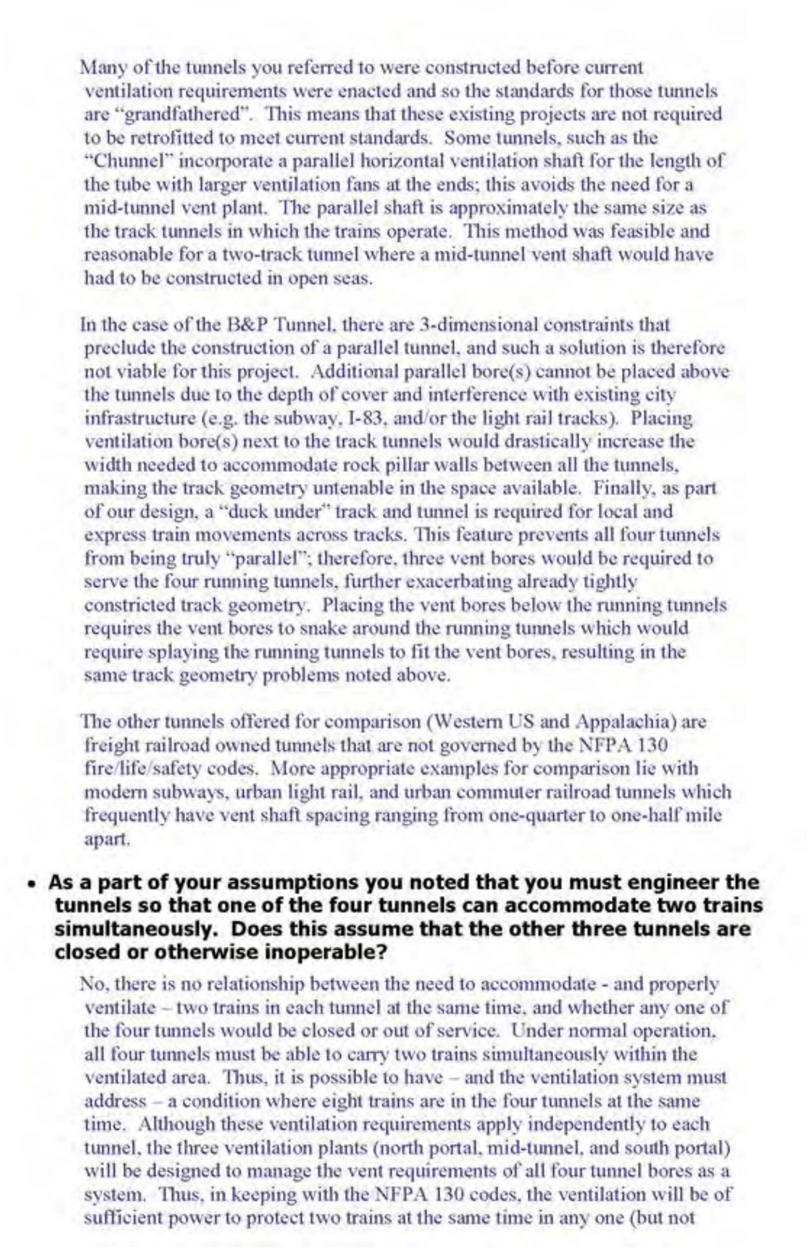
  - Dial tone = 80 dB
  - Talking at 3 feet = 65 dB
  - Quiet urban daytime = 50 dB
  - Quiet urban nighttime = 40 dB
  - Quiet rural nighttime = 25 dB

- **Are any alternatives to a central vent stack available or may any "workarounds" be engineered, thereby avoiding locating a central vent stack in Reservoir Hill?**

- **A two mile tunnel is not extremely long, and as I mentioned in my question last evening, there are several examples of lengthy tunnels without a central vent stack, including the Channel Tunnel, several in the EU (which have similar safety standards to the US), many examples in the Western portion of the United States and even in the Appalachians.**

COMMENTS

RESPONSES



Many of the tunnels you referred to were constructed before current ventilation requirements were enacted and so the standards for those tunnels are "grandfathered". This means that these existing projects are not required to be retrofitted to meet current standards. Some tunnels, such as the "Chunnel" incorporate a parallel horizontal ventilation shaft for the length of the tube with larger ventilation fans at the ends; this avoids the need for a mid-tunnel vent plant. The parallel shaft is approximately the same size as the track tunnels in which the trains operate. This method was feasible and reasonable for a two-track tunnel where a mid-tunnel vent shaft would have had to be constructed in open seas.

In the case of the B&P Tunnel, there are 3-dimensional constraints that preclude the construction of a parallel tunnel, and such a solution is therefore not viable for this project. Additional parallel bore(s) cannot be placed above the tunnels due to the depth of cover and interference with existing city infrastructure (e.g. the subway, I-83, and/or the light rail tracks). Placing ventilation bore(s) next to the track tunnels would drastically increase the width needed to accommodate rock pillar walls between all the tunnels, making the track geometry untenable in the space available. Finally, as part of our design, a "duck under" track and tunnel is required for local and express train movements across tracks. This feature prevents all four tunnels from being truly "parallel"; therefore, three vent bores would be required to serve the four running tunnels, further exacerbating already tightly constricted track geometry. Placing the vent bores below the running tunnels requires the vent bores to snake around the running tunnels which would require splaying the running tunnels to fit the vent bores, resulting in the same track geometry problems noted above.

The other tunnels offered for comparison (Western US and Appalachia) are freight railroad owned tunnels that are not governed by the NFPA 130 fire/life/safety codes. More appropriate examples for comparison lie with modern subways, urban light rail, and urban commuter railroad tunnels which frequently have vent shaft spacing ranging from one-quarter to one-half mile apart.

- **As a part of your assumptions you noted that you must engineer the tunnels so that one of the four tunnels can accommodate two trains simultaneously. Does this assume that the other three tunnels are closed or otherwise inoperable?**

No, there is no relationship between the need to accommodate - and properly ventilate – two trains in each tunnel at the same time, and whether any one of the four tunnels would be closed or out of service. Under normal operation, all four tunnels must be able to carry two trains simultaneously within the ventilated area. Thus, it is possible to have – and the ventilation system must address – a condition where eight trains are in the four tunnels at the same time. Although these ventilation requirements apply independently to each tunnel, the three ventilation plants (north portal, mid-tunnel, and south portal) will be designed to manage the vent requirements of all four tunnel bores as a system. Thus, in keeping with the NFPA 130 codes, the ventilation will be of sufficient power to protect two trains at the same time in any one (but not

COMMENTS

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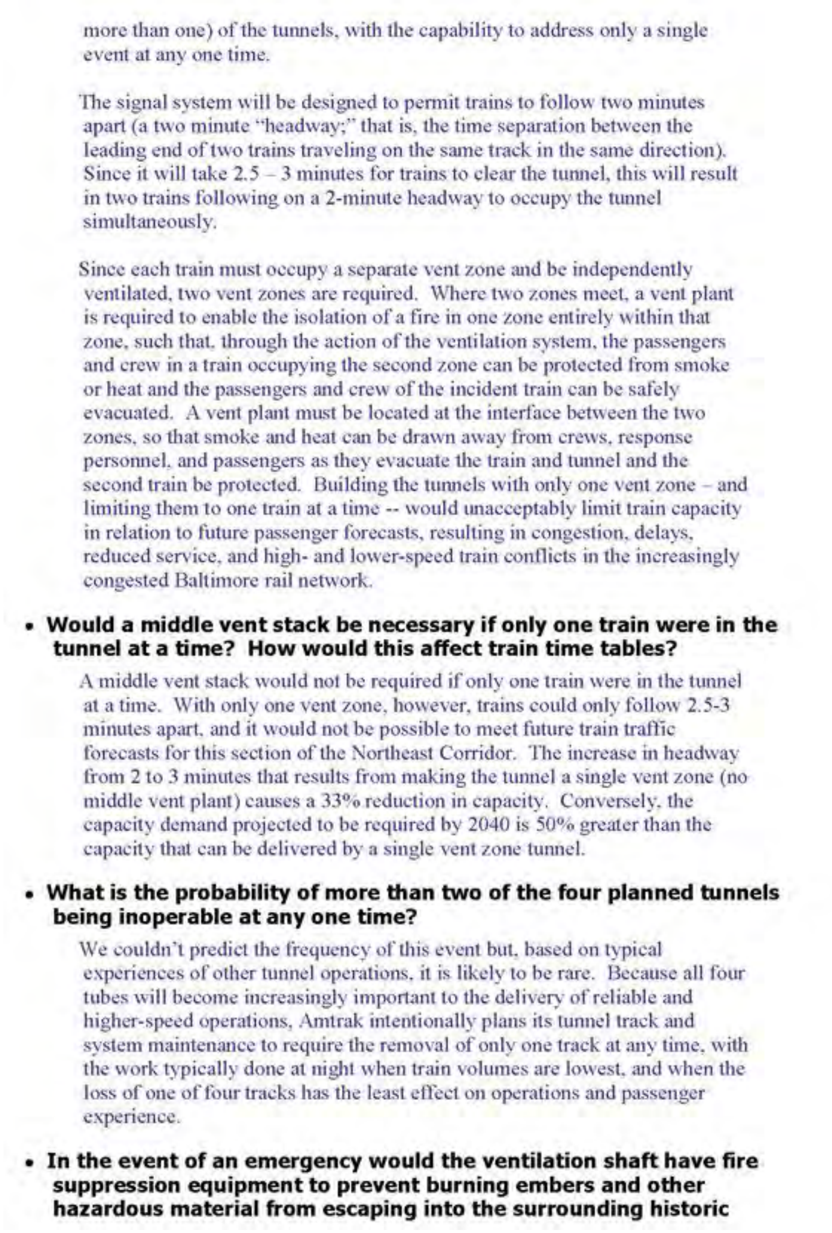


more than one) of the tunnels, with the capability to address only a single event at any one time.

The signal system will be designed to permit trains to follow two minutes apart (a two minute "headway;" that is, the time separation between the leading end of two trains traveling on the same track in the same direction). Since it will take 2.5 – 3 minutes for trains to clear the tunnel, this will result in two trains following on a 2-minute headway to occupy the tunnel simultaneously.

Since each train must occupy a separate vent zone and be independently ventilated, two vent zones are required. Where two zones meet, a vent plant is required to enable the isolation of a fire in one zone entirely within that zone, such that, through the action of the ventilation system, the passengers and crew in a train occupying the second zone can be protected from smoke or heat and the passengers and crew of the incident train can be safely evacuated. A vent plant must be located at the interface between the two zones, so that smoke and heat can be drawn away from crews, response personnel, and passengers as they evacuate the train and tunnel and the second train be protected. Building the tunnels with only one vent zone – and limiting them to one train at a time -- would unacceptably limit train capacity in relation to future passenger forecasts, resulting in congestion, delays, reduced service, and high- and lower-speed train conflicts in the increasingly congested Baltimore rail network.

- **Would a middle vent stack be necessary if only one train were in the tunnel at a time? How would this affect train time tables?**

A middle vent stack would not be required if only one train were in the tunnel at a time. With only one vent zone, however, trains could only follow 2.5-3 minutes apart, and it would not be possible to meet future train traffic forecasts for this section of the Northeast Corridor. The increase in headway from 2 to 3 minutes that results from making the tunnel a single vent zone (no middle vent plant) causes a 33% reduction in capacity. Conversely, the capacity demand projected to be required by 2040 is 50% greater than the capacity that can be delivered by a single vent zone tunnel.

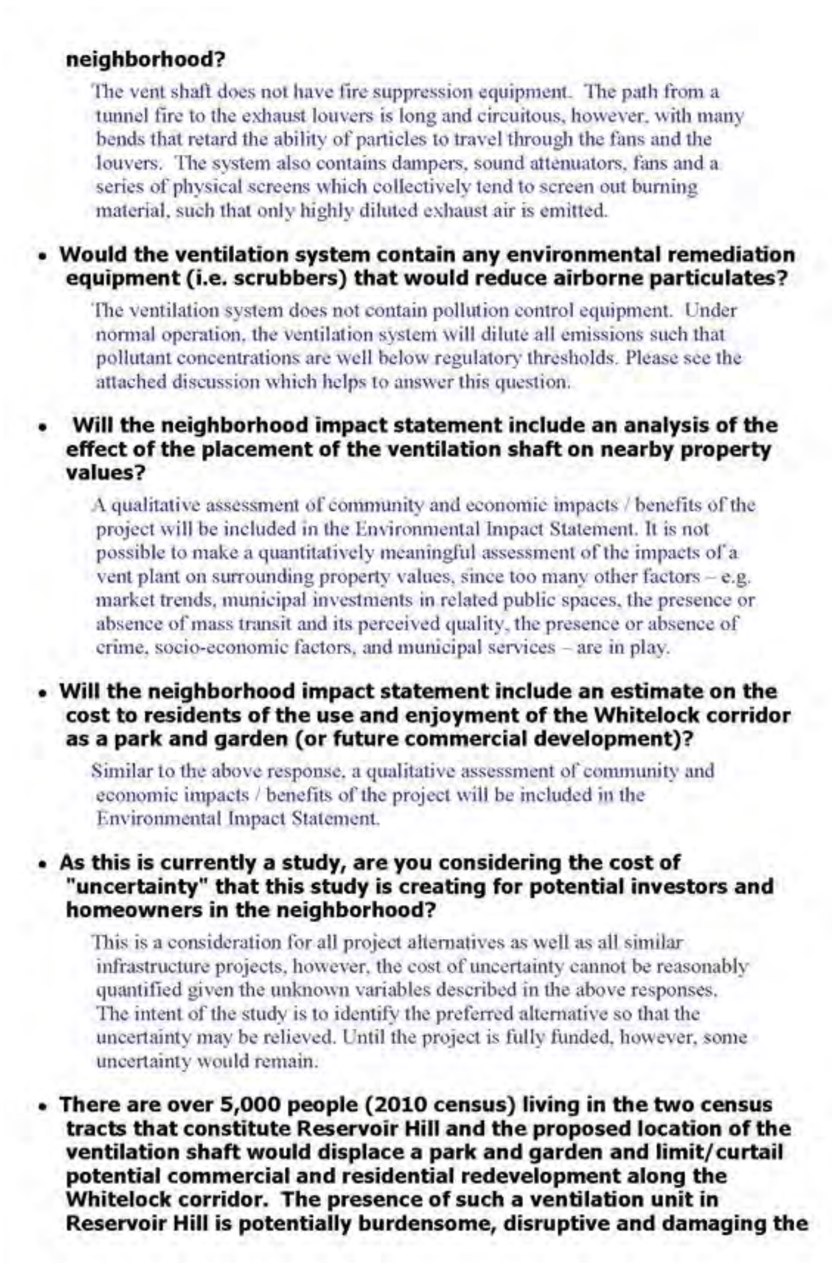
- **What is the probability of more than two of the four planned tunnels being inoperable at any one time?**

We couldn't predict the frequency of this event but, based on typical experiences of other tunnel operations, it is likely to be rare. Because all four tubes will become increasingly important to the delivery of reliable and higher-speed operations, Amtrak intentionally plans its tunnel track and system maintenance to require the removal of only one track at any time, with the work typically done at night when train volumes are lowest, and when the loss of one of four tracks has the least effect on operations and passenger experience.

- **In the event of an emergency would the ventilation shaft have fire suppression equipment to prevent burning embers and other hazardous material from escaping into the surrounding historic**

COMMENTS

RESPONSES



neighborhood?

The vent shaft does not have fire suppression equipment. The path from a tunnel fire to the exhaust louvers is long and circuitous, however, with many bends that retard the ability of particles to travel through the fans and the louvers. The system also contains dampers, sound attenuators, fans and a series of physical screens which collectively tend to screen out burning material, such that only highly diluted exhaust air is emitted.

- **Would the ventilation system contain any environmental remediation equipment (i.e. scrubbers) that would reduce airborne particulates?**

  The ventilation system does not contain pollution control equipment. Under normal operation, the ventilation system will dilute all emissions such that pollutant concentrations are well below regulatory thresholds. Please see the attached discussion which helps to answer this question.

- **Will the neighborhood impact statement include an analysis of the effect of the placement of the ventilation shaft on nearby property values?**

  A qualitative assessment of community and economic impacts / benefits of the project will be included in the Environmental Impact Statement. It is not possible to make a quantitatively meaningful assessment of the impacts of a vent plant on surrounding property values, since too many other factors – e.g. market trends, municipal investments in related public spaces, the presence or absence of mass transit and its perceived quality, the presence or absence of crime, socio-economic factors, and municipal services – are in play.

- **Will the neighborhood impact statement include an estimate on the cost to residents of the use and enjoyment of the Whitelock corridor as a park and garden (or future commercial development)?**

  Similar to the above response, a qualitative assessment of community and economic impacts / benefits of the project will be included in the Environmental Impact Statement.

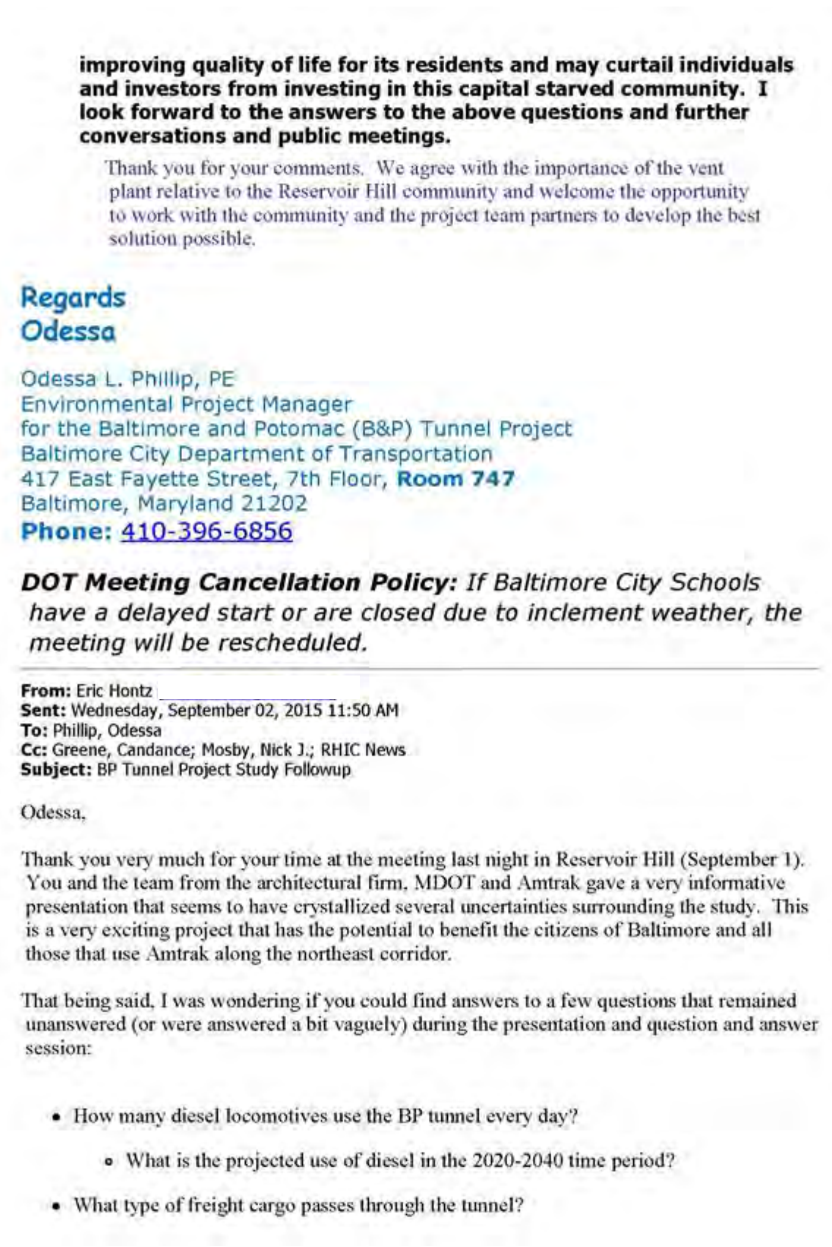
- **As this is currently a study, are you considering the cost of "uncertainty" that this study is creating for potential investors and homeowners in the neighborhood?**

  This is a consideration for all project alternatives as well as all similar infrastructure projects, however, the cost of uncertainty cannot be reasonably quantified given the unknown variables described in the above responses. The intent of the study is to identify the preferred alternative so that the uncertainty may be relieved. Until the project is fully funded, however, some uncertainty would remain.

- **There are over 5,000 people (2010 census) living in the two census tracts that constitute Reservoir Hill and the proposed location of the ventilation shaft would displace a park and garden and limit/curtail potential commercial and residential redevelopment along the Whitelock corridor. The presence of such a ventilation unit in Reservoir Hill is potentially burdensome, disruptive and damaging the**

COMMENTS

RESPONSES



improving quality of life for its residents and may curtail individuals and investors from investing in this capital starved community. I look forward to the answers to the above questions and further conversations and public meetings.

Thank you for your comments. We agree with the importance of the vent plant relative to the Reservoir Hill community and welcome the opportunity to work with the community and the project team partners to develop the best solution possible.

Regards
Odessa

Odessa L. Phillip, PE
Environmental Project Manager
for the Baltimore and Potomac (B&P) Tunnel Project
Baltimore City Department of Transportation
417 East Fayette Street, 7th Floor, **Room 747**
Baltimore, Maryland 21202
Phone: 410-396-6856

DOT Meeting Cancellation Policy: *If Baltimore City Schools have a delayed start or are closed due to inclement weather, the meeting will be rescheduled.*

From: Eric Hontz
Sent: Wednesday, September 02, 2015 11:50 AM
To: Phillip, Odessa
Cc: Greene, Candance; Mosby, Nick J.; RHIC News
Subject: BP Tunnel Project Study Followup

Odessa,

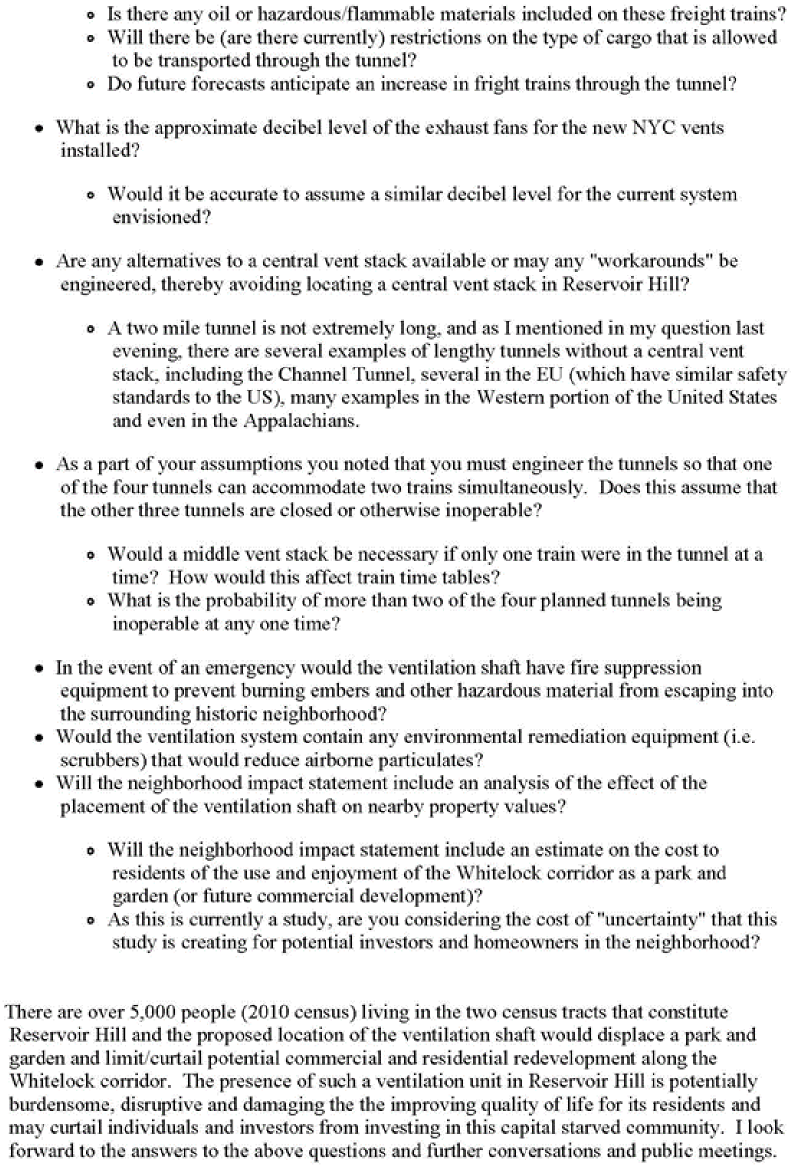
Thank you very much for your time at the meeting last night in Reservoir Hill (September 1). You and the team from the architectural firm, MDOT and Amtrak gave a very informative presentation that seems to have crystallized several uncertainties surrounding the study. This is a very exciting project that has the potential to benefit the citizens of Baltimore and all those that use Amtrak along the northeast corridor.

That being said, I was wondering if you could find answers to a few questions that remained unanswered (or were answered a bit vaguely) during the presentation and question and answer session:

- How many diesel locomotives use the BP tunnel every day?
    - What is the projected use of diesel in the 2020-2040 time period?
- What type of freight cargo passes through the tunnel?

COMMENTS

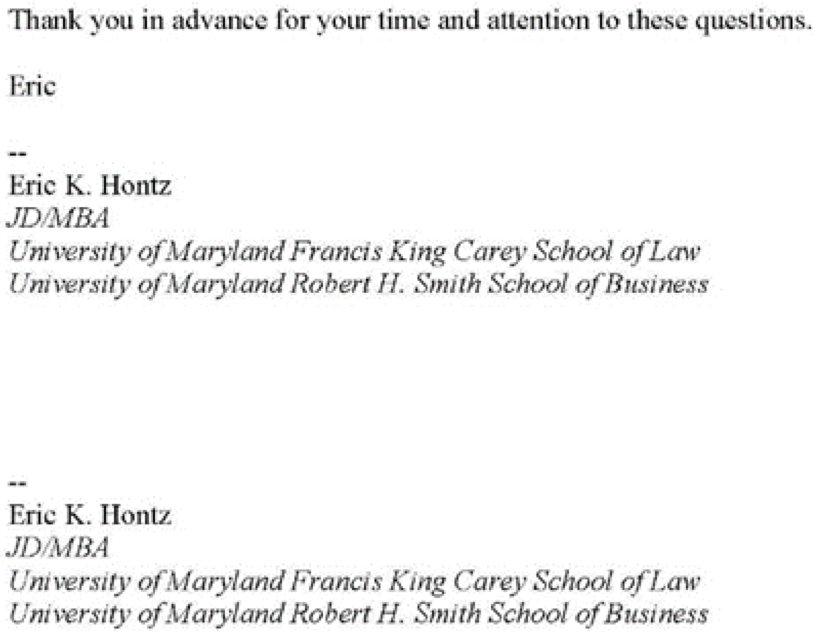
RESPONSES



  - Is there any oil or hazardous/flammable materials included on these freight trains?
  - Will there be (are there currently) restrictions on the type of cargo that is allowed to be transported through the tunnel?
  - Do future forecasts anticipate an increase in fright trains through the tunnel?
- What is the approximate decibel level of the exhaust fans for the new NYC vents installed?
  - Would it be accurate to assume a similar decibel level for the current system envisioned?
- Are any alternatives to a central vent stack available or may any "workarounds" be engineered, thereby avoiding locating a central vent stack in Reservoir Hill?
  - A two mile tunnel is not extremely long, and as I mentioned in my question last evening, there are several examples of lengthy tunnels without a central vent stack, including the Channel Tunnel, several in the EU (which have similar safety standards to the US), many examples in the Western portion of the United States and even in the Appalachians.
- As a part of your assumptions you noted that you must engineer the tunnels so that one of the four tunnels can accommodate two trains simultaneously. Does this assume that the other three tunnels are closed or otherwise inoperable?
  - Would a middle vent stack be necessary if only one train were in the tunnel at a time? How would this affect train time tables?
  - What is the probability of more than two of the four planned tunnels being inoperable at any one time?
- In the event of an emergency would the ventilation shaft have fire suppression equipment to prevent burning embers and other hazardous material from escaping into the surrounding historic neighborhood?
- Would the ventilation system contain any environmental remediation equipment (i.e. scrubbers) that would reduce airborne particulates?
- Will the neighborhood impact statement include an analysis of the effect of the placement of the ventilation shaft on nearby property values?
  - Will the neighborhood impact statement include an estimate on the cost to residents of the use and enjoyment of the Whitelock corridor as a park and garden (or future commercial development)?
  - As this is currently a study, are you considering the cost of "uncertainty" that this study is creating for potential investors and homeowners in the neighborhood?

There are over 5,000 people (2010 census) living in the two census tracts that constitute Reservoir Hill and the proposed location of the ventilation shaft would displace a park and garden and limit/curtail potential commercial and residential redevelopment along the Whitelock corridor. The presence of such a ventilation unit in Reservoir Hill is potentially burdensome, disruptive and damaging the the improving quality of life for its residents and may curtail individuals and investors from investing in this capital starved community. I look forward to the answers to the above questions and further conversations and public meetings.

COMMENTS | **RESPONSES**



Thank you in advance for your time and attention to these questions.

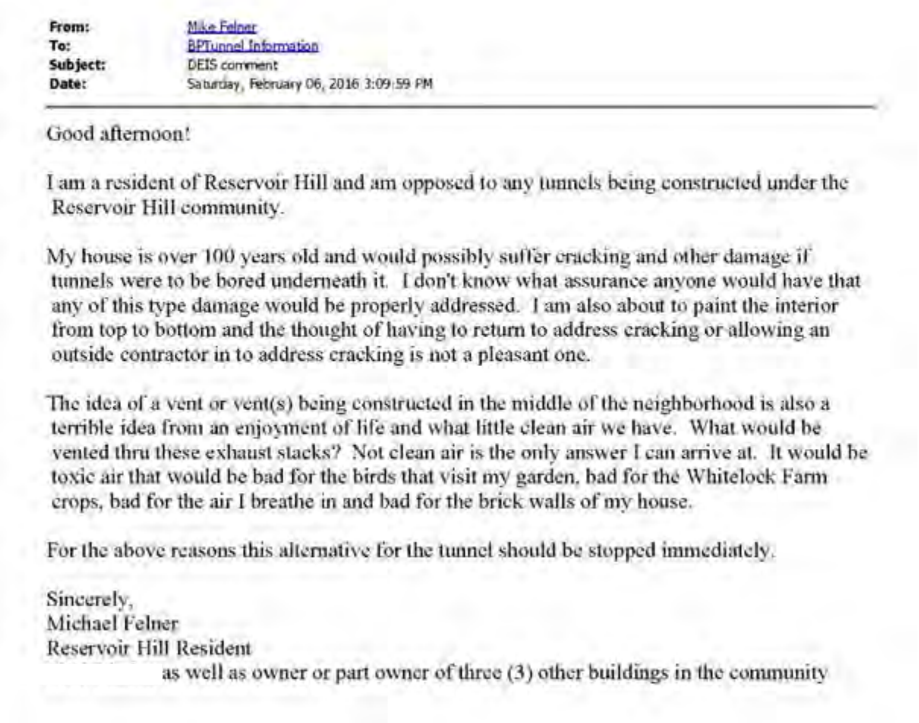
Eric

--
Eric K. Hontz
JD/MBA
University of Maryland Francis King Carey School of Law
University of Maryland Robert H. Smith School of Business

--
Eric K. Hontz
JD/MBA
University of Maryland Francis King Carey School of Law
University of Maryland Robert H. Smith School of Business

COMMENTS

DEIS Comment 38:



From: Mike Felner
To: BPTunnel Information
Subject: DEIS comment
Date: Saturday, February 06, 2016 3:09:59 PM

Good afternoon!

I am a resident of Reservoir Hill and am opposed to any tunnels being constructed under the Reservoir Hill community.

1 My house is over 100 years old and would possibly suffer cracking and other damage if tunnels were to be bored underneath it. I don't know what assurance anyone would have that any of this type damage would be properly addressed. I am also about to paint the interior from top to bottom and the thought of having to return to address cracking or allowing an outside contractor in to address cracking is not a pleasant one.

2 The idea of a vent or vent(s) being constructed in the middle of the neighborhood is also a terrible idea from an enjoyment of life and what little clean air we have. What would be vented thru these exhaust stacks? Not clean air is the only answer I can arrive at. It would be toxic air that would be bad for the birds that visit my garden, bad for the Whitelock Farm crops, bad for the air I breathe in and bad for the brick walls of my house.

For the above reasons this alternative for the tunnel should be stopped immediately.

Sincerely,
Michael Felner
Reservoir Hill Resident
as well as owner or part owner of three (3) other buildings in the community

RESPONSES

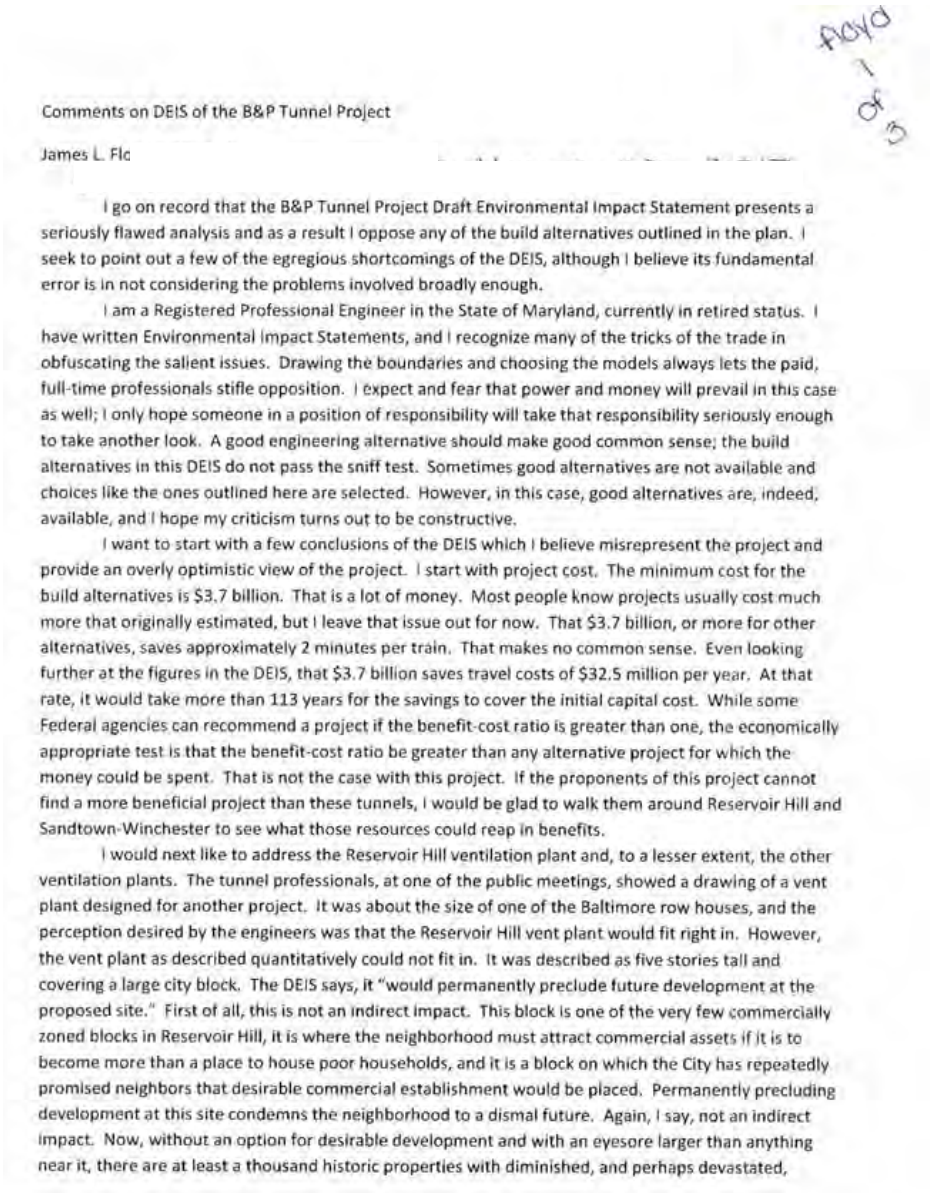
Response to Comment 1:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be fully compensated for the cost of repairs.

Response to Comment 2:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

COMMENTS

DEIS Comment 39:



Floyd 1 of 3

Comments on DEIS of the B&P Tunnel Project

James L. Flc [redacted]

I go on record that the B&P Tunnel Project Draft Environmental Impact Statement presents a seriously flawed analysis and as a result I oppose any of the build alternatives outlined in the plan. I seek to point out a few of the egregious shortcomings of the DEIS, although I believe its fundamental error is in not considering the problems involved broadly enough.

I am a Registered Professional Engineer in the State of Maryland, currently in retired status. I have written Environmental Impact Statements, and I recognize many of the tricks of the trade in obfuscating the salient issues. Drawing the boundaries and choosing the models always lets the paid, full-time professionals stifle opposition. I expect and fear that power and money will prevail in this case as well; I only hope someone in a position of responsibility will take that responsibility seriously enough to take another look. 1 A good engineering alternative should make good common sense; the build alternatives in this DEIS do not pass the sniff test. Sometimes good alternatives are not available and choices like the ones outlined here are selected. However, in this case, good alternatives are, indeed, available, and I hope my criticism turns out to be constructive.

I want to start with a few conclusions of the DEIS which I believe misrepresent the project and provide an overly optimistic view of the project. 2 I start with project cost. The minimum cost for the build alternatives is $3.7 billion. That is a lot of money. Most people know projects usually cost much more that originally estimated, but I leave that issue out for now. That $3.7 billion, or more for other alternatives, saves approximately 2 minutes per train. That makes no common sense. Even looking further at the figures in the DEIS, that $3.7 billion saves travel costs of $32.5 million per year. At that rate, it would take more than 113 years for the savings to cover the initial capital cost. While some Federal agencies can recommend a project if the benefit-cost ratio is greater than one, the economically appropriate test is that the benefit-cost ratio be greater than any alternative project for which the money could be spent. That is not the case with this project. If the proponents of this project cannot find a more beneficial project than these tunnels, I would be glad to walk them around Reservoir Hill and Sandtown-Winchester to see what those resources could reap in benefits.

3 I would next like to address the Reservoir Hill ventilation plant and, to a lesser extent, the other ventilation plants. The tunnel professionals, at one of the public meetings, showed a drawing of a vent plant designed for another project. It was about the size of one of the Baltimore row houses, and the perception desired by the engineers was that the Reservoir Hill vent plant would fit right in. However, the vent plant as described quantitatively could not fit in. It was described as five stories tall and covering a large city block. The DEIS says, it "would permanently preclude future development at the proposed site." First of all, this is not an indirect impact. This block is one of the very few commercially zoned blocks in Reservoir Hill, it is where the neighborhood must attract commercial assets if it is to become more than a place to house poor households, and it is a block on which the City has repeatedly promised neighbors that desirable commercial establishment would be placed. Permanently precluding development at this site condemns the neighborhood to a dismal future. Again, I say, not an indirect impact. Now, without an option for desirable development and with an eyesore larger than anything near it, there are at least a thousand historic properties with diminished, and perhaps devastated,

RESPONSES

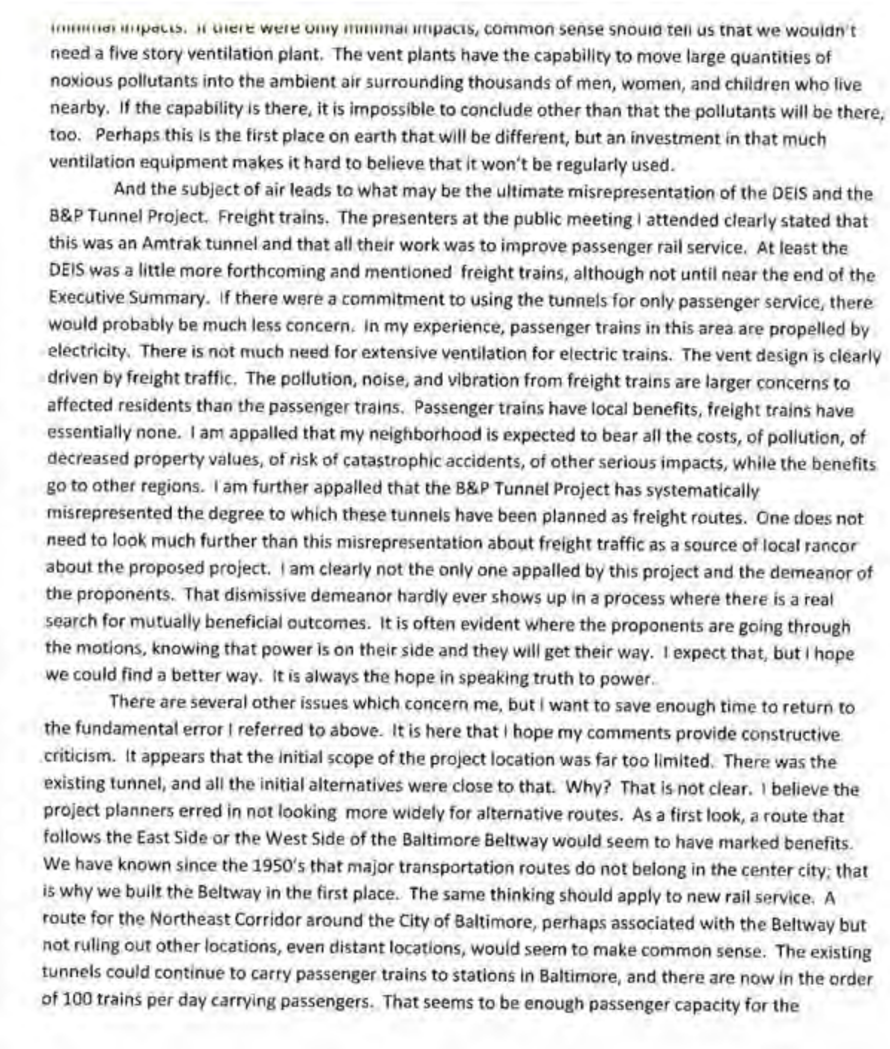
Response to Comment 1:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Response to Comment 2:
While reducing travel time through B&P Tunnel and along the NEC is a goal of the Project, it is not the sole reason the Project was initiated. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS. Project goals include reducing travel time through the B&P Tunnel and along the NEC, accommodating existing and projected travel demand for intercity and commuter passenger services, eliminating impediments to existing and projected operations along the NEC, and providing operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

Response to Comment 3:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that

COMMENTS



minimal impacts. If there were only minimal impacts, common sense should tell us that we wouldn't
need a five story ventilation plant. The vent plants have the capability to move large quantities of
4 noxious pollutants into the ambient air surrounding thousands of men, women, and children who live
nearby. If the capability is there, it is impossible to conclude other than that the pollutants will be there,
too. Perhaps this is the first place on earth that will be different, but an investment in that much
ventilation equipment makes it hard to believe that it won't be regularly used.

And the subject of air leads to what may be the ultimate misrepresentation of the DEIS and the
B&P Tunnel Project. Freight trains. The presenters at the public meeting I attended clearly stated that
this was an Amtrak tunnel and that all their work was to improve passenger rail service. At least the
DEIS was a little more forthcoming and mentioned freight trains, although not until near the end of the
Executive Summary. If there were a commitment to using the tunnels for only passenger service, there
would probably be much less concern. In my experience, passenger trains in this area are propelled by
electricity. There is not much need for extensive ventilation for electric trains. The vent design is clearly
5 driven by freight traffic. The pollution, noise, and vibration from freight trains are larger concerns to
affected residents than the passenger trains. Passenger trains have local benefits, freight trains have
6 essentially none. I am appalled that my neighborhood is expected to bear all the costs, of pollution, of
decreased property values, of risk of catastrophic accidents, of other serious impacts, while the benefits
go to other regions. I am further appalled that the B&P Tunnel Project has systematically
7 misrepresented the degree to which these tunnels have been planned as freight routes. One does not
need to look much further than this misrepresentation about freight traffic as a source of local rancor
about the proposed project. I am clearly not the only one appalled by this project and the demeanor of
the proponents. That dismissive demeanor hardly ever shows up in a process where there is a real
search for mutually beneficial outcomes. It is often evident where the proponents are going through
the motions, knowing that power is on their side and they will get their way. I expect that, but I hope
we could find a better way. It is always the hope in speaking truth to power.

There are several other issues which concern me, but I want to save enough time to return to
the fundamental error I referred to above. It is here that I hope my comments provide constructive
8 criticism. It appears that the initial scope of the project location was far too limited. There was the
existing tunnel, and all the initial alternatives were close to that. Why? That is not clear. I believe the
project planners erred in not looking more widely for alternative routes. As a first look, a route that
follows the East Side or the West Side of the Baltimore Beltway would seem to have marked benefits.
We have known since the 1950's that major transportation routes do not belong in the center city; that
is why we built the Beltway in the first place. The same thinking should apply to new rail service. A
route for the Northeast Corridor around the City of Baltimore, perhaps associated with the Beltway but
not ruling out other locations, even distant locations, would seem to make common sense. The existing
tunnels could continue to carry passenger trains to stations in Baltimore, and there are now in the order
of 100 trains per day carrying passengers. That seems to be enough passenger capacity for the

RESPONSES

corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

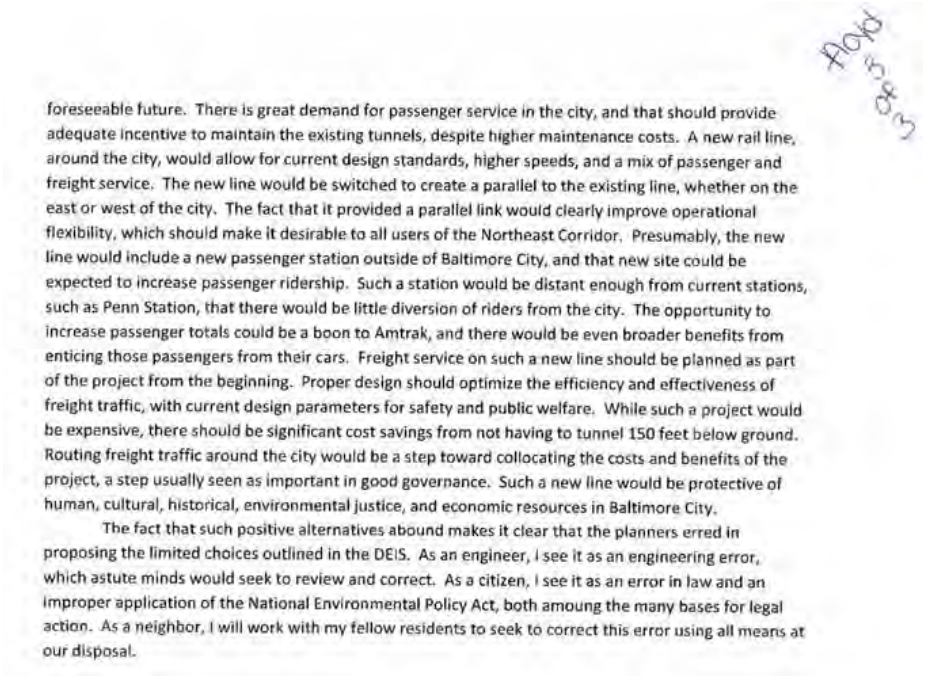
Response to Comment 4:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

Response to Comment 5:
Ventilation plants would be necessary regardless of whether the Tunnel served passengers or freight. As described in **Chapter III** of the FEIS, the build alternatives would require three ventilation facilities in order to meet current safety industry standards (NFPA 130) for projected NEC FUTURE train demand headway, and to ensure proper ventilation of the proposed tunnels. The purpose of the ventilation facility is to pull fresh air into the tunnel and ventilate the tunnel air to the outside. One ventilation facility will be located at the south portal, and another will be located 300-600 feet from the north portal. A third ventilation facility would be located at street level, connected to the bored portion of the tunnels by a vertical shaft and connecting tunnel (plenum), splitting the proposed tunnel into two unequal lengths. The Intermediate Ventilation Facility would consist of a building, approximately 100 feet by 200 feet in plan with a maximum height of 60 feet.

Response to Comment 6:
Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am and 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am, and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit

COMMENTS



Floyd 3 of 3

9 foreseeable future. There is great demand for passenger service in the city, and that should provide adequate incentive to maintain the existing tunnels, despite higher maintenance costs. A new rail line, around the city, would allow for current design standards, higher speeds, and a mix of passenger and freight service. The new line would be switched to create a parallel to the existing line, whether on the east or west of the city. The fact that it provided a parallel link would clearly improve operational flexibility, which should make it desirable to all users of the Northeast Corridor. Presumably, the new line would include a new passenger station outside of Baltimore City, and that new site could be expected to increase passenger ridership. Such a station would be distant enough from current stations, such as Penn Station, that there would be little diversion of riders from the city. The opportunity to increase passenger totals could be a boon to Amtrak, and there would be even broader benefits from enticing those passengers from their cars. Freight service on such a new line should be planned as part of the project from the beginning. Proper design should optimize the efficiency and effectiveness of freight traffic, with current design parameters for safety and public welfare. While such a project would be expensive, there should be significant cost savings from not having to tunnel 150 feet below ground. Routing freight traffic around the city would be a step toward collocating the costs and benefits of the project, a step usually seen as important in good governance. Such a new line would be protective of human, cultural, historical, environmental justice, and economic resources in Baltimore City.

The fact that such positive alternatives abound makes it clear that the planners erred in proposing the limited choices outlined in the DEIS. As an engineer, I see it as an engineering error, which astute minds would seek to review and correct. As a citizen, I see it as an error in law and an improper application of the National Environmental Policy Act, both amoung the many bases for legal action. As a neighbor, I will work with my fellow residents to seek to correct this error using all means at our disposal.

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through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are in **Chapter VI**.

The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

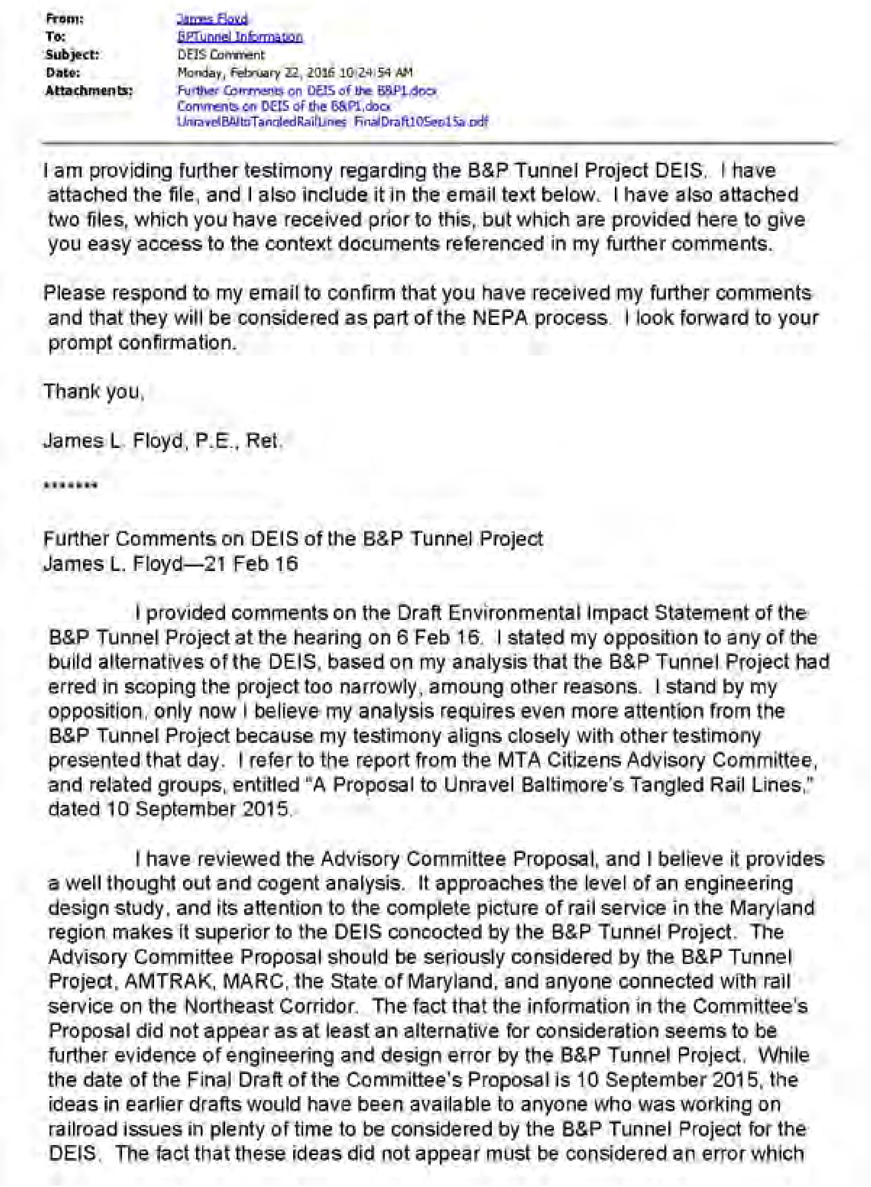
Response to Comment 7:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Response to Comment 8:
Please refer to Comment 1 for information regarding the alternatives analysis. An alternative was considered to have a fatal flaw if it did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge. The viable alternatives are close to the existing Tunnel in order to utilize existing infrastructure.

Response to Comment 9:
The Maryland Department of Transportation oversees comprehensive transportation planning for the State. Prior studies have been performed that evaluate the full network of rail corridors, especially those in and around the City of Baltimore. The study of the B&P Tunnel partly resulted from the identification of this Project as a critical component to the greater rail access plan.

COMMENTS

DEIS Comment 40:



From: James Floyd
To: BPTunnel Information
Subject: DEIS Comment
Date: Monday, February 22, 2016 10:24:54 AM
Attachments: Further Comments on DEIS of the B&P1.docx
Comments on DEIS of the B&P1.docx
UnravelBAltoTangledRailLines FinalDraft10Sep15a.pdf

I am providing further testimony regarding the B&P Tunnel Project DEIS. I have attached the file, and I also include it in the email text below. I have also attached two files, which you have received prior to this, but which are provided here to give you easy access to the context documents referenced in my further comments.

Please respond to my email to confirm that you have received my further comments and that they will be considered as part of the NEPA process. I look forward to your prompt confirmation.

Thank you,

James L. Floyd, P.E., Ret.

****

Further Comments on DEIS of the B&P Tunnel Project
James L. Floyd—21 Feb 16

I provided comments on the Draft Environmental Impact Statement of the B&P Tunnel Project at the hearing on 6 Feb 16. I stated my opposition to any of the build alternatives of the DEIS, based on my analysis that the B&P Tunnel Project had erred in scoping the project too narrowly, amoung other reasons. I stand by my opposition, only now I believe my analysis requires even more attention from the B&P Tunnel Project because my testimony aligns closely with other testimony presented that day. I refer to the report from the MTA Citizens Advisory Committee, and related groups, entitled "A Proposal to Unravel Baltimore's Tangled Rail Lines," dated 10 September 2015.

I have reviewed the Advisory Committee Proposal, and I believe it provides a well thought out and cogent analysis. It approaches the level of an engineering design study, and its attention to the complete picture of rail service in the Maryland region makes it superior to the DEIS concocted by the B&P Tunnel Project. The Advisory Committee Proposal should be seriously considered by the B&P Tunnel Project, AMTRAK, MARC, the State of Maryland, and anyone connected with rail service on the Northeast Corridor. The fact that the information in the Committee's Proposal did not appear as at least an alternative for consideration seems to be further evidence of engineering and design error by the B&P Tunnel Project. While the date of the Final Draft of the Committee's Proposal is 10 September 2015, the ideas in earlier drafts would have been available to anyone who was working on railroad issues in plenty of time to be considered by the B&P Tunnel Project for the DEIS. The fact that these ideas did not appear must be considered an error which

RESPONSES

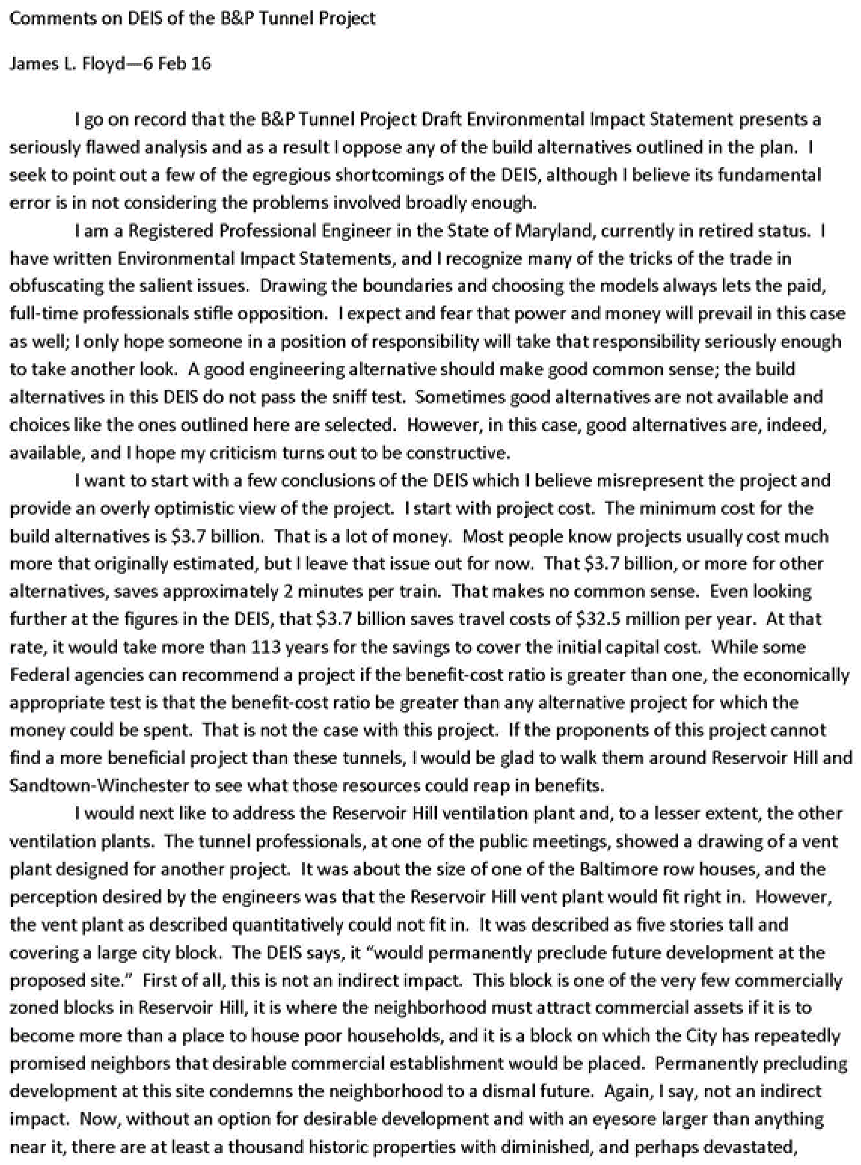
The report provided, *A Proposal to Unravel Baltimore's Tangled Rail Lines*, argues for a comprehensive system approach to rail planning in Baltimore and the mid-Atlantic region. It describes a list of projects and the order in which they should be completed. The report takes into consideration local, state, and regional transportation routes, and recommends new construction at a number of locations in order to relieve congestion and create opportunities for expanding rail service in the future.

While recommendations in the report focus on resolving issues at a regional level, they would not address or resolve the specific needs of the B&P Tunnel; therefore, the improvements suggested in the report would be beyond the purview of the Project. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life. It is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. For additional information regarding The Purpose and Need for the Project, please see **Chapter II** of this FEIS.

To review the September 2015 report in its entirety, please refer to **DEIS Comment #11.**

For the responses to comments provided via the attached email dated February 6, 2016, please see **DEIS Comment #39**.

COMMENTS



Comments on DEIS of the B&P Tunnel Project

James L. Floyd—6 Feb 16

I go on record that the B&P Tunnel Project Draft Environmental Impact Statement presents a seriously flawed analysis and as a result I oppose any of the build alternatives outlined in the plan. I seek to point out a few of the egregious shortcomings of the DEIS, although I believe its fundamental error is in not considering the problems involved broadly enough.

I am a Registered Professional Engineer in the State of Maryland, currently in retired status. I have written Environmental Impact Statements, and I recognize many of the tricks of the trade in obfuscating the salient issues. Drawing the boundaries and choosing the models always lets the paid, full-time professionals stifle opposition. I expect and fear that power and money will prevail in this case as well; I only hope someone in a position of responsibility will take that responsibility seriously enough to take another look. A good engineering alternative should make good common sense; the build alternatives in this DEIS do not pass the sniff test. Sometimes good alternatives are not available and choices like the ones outlined here are selected. However, in this case, good alternatives are, indeed, available, and I hope my criticism turns out to be constructive.

I want to start with a few conclusions of the DEIS which I believe misrepresent the project and provide an overly optimistic view of the project. I start with project cost. The minimum cost for the build alternatives is $3.7 billion. That is a lot of money. Most people know projects usually cost much more that originally estimated, but I leave that issue out for now. That $3.7 billion, or more for other alternatives, saves approximately 2 minutes per train. That makes no common sense. Even looking further at the figures in the DEIS, that $3.7 billion saves travel costs of $32.5 million per year. At that rate, it would take more than 113 years for the savings to cover the initial capital cost. While some Federal agencies can recommend a project if the benefit-cost ratio is greater than one, the economically appropriate test is that the benefit-cost ratio be greater than any alternative project for which the money could be spent. That is not the case with this project. If the proponents of this project cannot find a more beneficial project than these tunnels, I would be glad to walk them around Reservoir Hill and Sandtown-Winchester to see what those resources could reap in benefits.

I would next like to address the Reservoir Hill ventilation plant and, to a lesser extent, the other ventilation plants. The tunnel professionals, at one of the public meetings, showed a drawing of a vent plant designed for another project. It was about the size of one of the Baltimore row houses, and the perception desired by the engineers was that the Reservoir Hill vent plant would fit right in. However, the vent plant as described quantitatively could not fit in. It was described as five stories tall and covering a large city block. The DEIS says, it "would permanently preclude future development at the proposed site." First of all, this is not an indirect impact. This block is one of the very few commercially zoned blocks in Reservoir Hill, it is where the neighborhood must attract commercial assets if it is to become more than a place to house poor households, and it is a block on which the City has repeatedly promised neighbors that desirable commercial establishment would be placed. Permanently precluding development at this site condemns the neighborhood to a dismal future. Again, I say, not an indirect impact. Now, without an option for desirable development and with an eyesore larger than anything near it, there are at least a thousand historic properties with diminished, and perhaps devastated,

RESPONSES

This text refers to the commenter's original submission. Please see **DEIS Comment #39** for the original submission and responses.

COMMENTS

RESPONSES

prospects. The entire Cultural Resources section of the DEIS becomes a laughable figment of the imagination of people who don't live nearby, who don't seem to know what is going on in the local area, and don't seem to care.

Before I leave the subject of the vent plants, I feel compelled to mention the air. Our air in Baltimore is not great. The DEIS notes the problems. However, the DEIS only alludes to sporadic and minimal impacts. If there were only minimal impacts, common sense should tell us that we wouldn't need a five story ventilation plant. The vent plants have the capability to move large quantities of noxious pollutants into the ambient air surrounding thousands of men, women, and children who live nearby. If the capability is there, it is impossible to conclude other than that the pollutants will be there, too. Perhaps this is the first place on earth that will be different, but an investment in that much ventilation equipment makes it hard to believe that it won't be regularly used.

And the subject of air leads to what may be the ultimate misrepresentation of the DEIS and the B&P Tunnel Project. Freight trains. The presenters at the public meeting I attended clearly stated that this was an Amtrak tunnel and that all their work was to improve passenger rail service. At least the DEIS was a little more forthcoming and mentioned freight trains, although not until near the end of the Executive Summary. If there were a commitment to using the tunnels for only passenger service, there would probably be much less concern. In my experience, passenger trains in this area are propelled by electricity. There is not much need for extensive ventilation for electric trains. The vent design is clearly driven by freight traffic. The pollution, noise, and vibration from freight trains are larger concerns to affected residents than the passenger trains. Passenger trains have local benefits, freight trains have essentially none. I am appalled that my neighborhood is expected to bear all the costs, of pollution, of decreased property values, of risk of catastrophic accidents, of other serious impacts, while the benefits go to other regions. I am further appalled that the B&P Tunnel Project has systematically misrepresented the degree to which these tunnels have been planned as freight routes. One does not need to look much further than this misrepresentation about freight traffic as a source of local rancor about the proposed project. I am clearly not the only one appalled by this project and the demeanor of the proponents. That dismissive demeanor hardly ever shows up in a process where there is a real search for mutually beneficial outcomes. It is often evident where the proponents are going through the motions, knowing that power is on their side and they will get their way. I expect that, but I hope we could find a better way. It is always the hope in speaking truth to power.

There are several other issues which concern me, but I want to save enough time to return to the fundamental error I referred to above. It is here that I hope my comments provide constructive criticism. It appears that the initial scope of the project location was far too limited. There was the existing tunnel, and all the initial alternatives were close to that. Why? That is not clear. I believe the project planners erred in not looking more widely for alternative routes. As a first look, a route that follows the East Side or the West Side of the Baltimore Beltway would seem to have marked benefits. We have known since the 1950's that major transportation routes do not belong in the center city; that is why we built the Beltway in the first place. The same thinking should apply to new rail service. A route for the Northeast Corridor around the City of Baltimore, perhaps associated with the Beltway but not ruling out other locations, even distant locations, would seem to make common sense. The existing tunnels could continue to carry passenger trains to stations in Baltimore, and there are now in the order of 100 trains per day carrying passengers. That seems to be enough passenger capacity for the

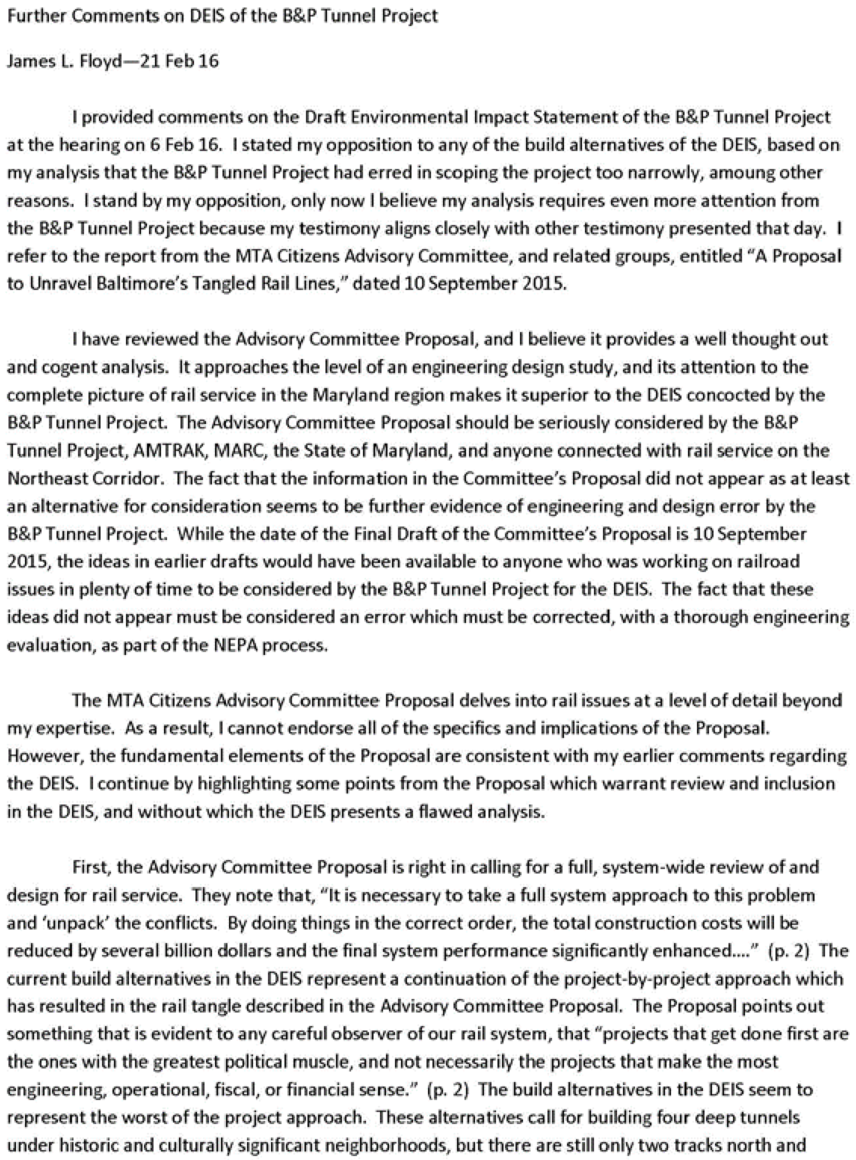
COMMENTS

RESPONSES

foreseeable future. There is great demand for passenger service in the city, and that should provide adequate incentive to maintain the existing tunnels, despite higher maintenance costs. A new rail line, around the city, would allow for current design standards, higher speeds, and a mix of passenger and freight service. The new line would be switched to create a parallel to the existing line, whether on the east or west of the city. The fact that it provided a parallel link would clearly improve operational flexibility, which should make it desirable to all users of the Northeast Corridor. Presumably, the new line would include a new passenger station outside of Baltimore City, and that new site could be expected to increase passenger ridership. Such a station would be distant enough from current stations, such as Penn Station, that there would be little diversion of riders from the city. The opportunity to increase passenger totals could be a boon to Amtrak, and there would be even broader benefits from enticing those passengers from their cars. Freight service on such a new line should be planned as part of the project from the beginning. Proper design should optimize the efficiency and effectiveness of freight traffic, with current design parameters for safety and public welfare. While such a project would be expensive, there should be significant cost savings from not having to tunnel 150 feet below ground. Routing freight traffic around the city would be a step toward collocating the costs and benefits of the project, a step usually seen as important in good governance. Such a new line would be protective of human, cultural, historical, environmental justice, and economic resources in Baltimore City.

The fact that such positive alternatives abound makes it clear that the planners erred in proposing the limited choices outlined in the DEIS. As an engineer, I see it as an engineering error, which astute minds would seek to review and correct. As a citizen, I see it as an error in law and an improper application of the National Environmental Policy Act, both amoung the many bases for legal action. As a neighbor, I will work with my fellow residents to seek to correct this error using all means at our disposal.

COMMENTS



Further Comments on DEIS of the B&P Tunnel Project

James L. Floyd—21 Feb 16

I provided comments on the Draft Environmental Impact Statement of the B&P Tunnel Project at the hearing on 6 Feb 16. I stated my opposition to any of the build alternatives of the DEIS, based on my analysis that the B&P Tunnel Project had erred in scoping the project too narrowly, amoung other reasons. I stand by my opposition, only now I believe my analysis requires even more attention from the B&P Tunnel Project because my testimony aligns closely with other testimony presented that day. I refer to the report from the MTA Citizens Advisory Committee, and related groups, entitled "A Proposal to Unravel Baltimore's Tangled Rail Lines," dated 10 September 2015.

1 I have reviewed the Advisory Committee Proposal, and I believe it provides a well thought out and cogent analysis. It approaches the level of an engineering design study, and its attention to the complete picture of rail service in the Maryland region makes it superior to the DEIS concocted by the B&P Tunnel Project. The Advisory Committee Proposal should be seriously considered by the B&P Tunnel Project, AMTRAK, MARC, the State of Maryland, and anyone connected with rail service on the Northeast Corridor. The fact that the information in the Committee's Proposal did not appear as at least an alternative for consideration seems to be further evidence of engineering and design error by the B&P Tunnel Project. While the date of the Final Draft of the Committee's Proposal is 10 September 2015, the ideas in earlier drafts would have been available to anyone who was working on railroad issues in plenty of time to be considered by the B&P Tunnel Project for the DEIS. The fact that these ideas did not appear must be considered an error which must be corrected, with a thorough engineering evaluation, as part of the NEPA process.

The MTA Citizens Advisory Committee Proposal delves into rail issues at a level of detail beyond my expertise. As a result, I cannot endorse all of the specifics and implications of the Proposal. However, the fundamental elements of the Proposal are consistent with my earlier comments regarding the DEIS. I continue by highlighting some points from the Proposal which warrant review and inclusion in the DEIS, and without which the DEIS presents a flawed analysis.

First, the Advisory Committee Proposal is right in calling for a full, system-wide review of and design for rail service. They note that, "It is necessary to take a full system approach to this problem and 'unpack' the conflicts. By doing things in the correct order, the total construction costs will be reduced by several billion dollars and the final system performance significantly enhanced...." (p. 2) The current build alternatives in the DEIS represent a continuation of the project-by-project approach which has resulted in the rail tangle described in the Advisory Committee Proposal. The Proposal points out something that is evident to any careful observer of our rail system, that "projects that get done first are the ones with the greatest political muscle, and not necessarily the projects that make the most engineering, operational, fiscal, or financial sense." (p. 2) The build alternatives in the DEIS seem to represent the worst of the project approach. These alternatives call for building four deep tunnels under historic and culturally significant neighborhoods, but there are still only two tracks north and

RESPONSES

Response to Comment 1:

The report provided, *A Proposal to Unravel Baltimore's Tangled Rail Lines*, argues for a comprehensive system approach to rail planning in Baltimore and the mid-Atlantic region. It describes a list of projects and the order in which they should be completed. The report takes into consideration local, state, and regional transportation routes, and recommends new construction at a number of locations in order to relieve congestion and create opportunities for expanding rail service in the future.

While recommendations in the report focus on resolving issues at a regional level, they would not address or resolve the specific needs of the B&P Tunnel; therefore, the improvements suggested in the report would be beyond the purview of the Project. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life. It is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. For additional information regarding The Purpose and Need for the Project, please see **Chapter II** of this FEIS.

To review the September 2015 report in its entirety, please refer to **DEIS Comment #11.**

COMMENTS

RESPONSES

south of the project proposed by the B&P Tunnel Project. It does not take a great deal of foresight to see that tunnel proponents, if successful in building these tunnels, will use that fact that the tunnels have been built to justify, and probably force, the addition of tracks. Other neighborhoods will have to work to oppose this short-sighted rail design. If they lose, they will face the degradation the B&P Tunnel Project wants impose on Reservoir Hill and Sandtown-Winchester. If they succeed, the tunnels proposed in the DEIS will become a repeat of the "Road to Nowhere," where Route 70 has one disconnected segment in the city which destroyed a wide swath of neighborhoods for no social benefit. The failure to adopt a system-wide approach to the need for rail improvements appears to be the fundamental error of the B&P Tunnel Project DEIS. The fact that the Advisory Committee Proposal includes such a holistic analysis proves that it can and should be done. It is likely that the Advisory Committee has done most of the work on that holistic approach and has provided it to the B&P Tunnel Project for their use.

Second, the Advisory Committee Proposal appears to have gotten it right, unlike the B&P Tunnel Project DEIS, in calling for a separate rail line, with tunnels as needed, to serve the needs for high volume and high speed freight traffic (p. 4). The Advisory Committee Proposal calls for a rail line passing through Marley Neck and Sparrows Point; further details are not included in their Proposal. Certainly the exact alignment would be subject to further engineering scrutiny, but freight rail service clearly needs to be associated with Baltimore's harbor. I want to make it clear that I believe that the Port of Baltimore and the freight rail service which connects the Port to the regional, state, and national economies are of the highest importance. However, I also believe that it seems imprudent to route all that freight back through Baltimore city, saving two minutes in new tunnels but otherwise clacking along over outdated infrastructure which cannot handle the freight flow necessary to keep the Port operating at optimum efficiency. The idea of a separate route for rail service, not passing through the residential neighborhoods of Baltimore, was central to my earlier comments on the DEIS; I deemed the idea a constructive criticism. Now the Advisory Committee Proposal has made that idea an even more constructive criticism by providing detail regarding route, order of construction, and coordination with other rail infrastructure needs.

Third, the Advisory Committee Proposal addresses intercity passenger rail service by calling for a "Tunnel for high speed, intercity rail under Fayette Street with a station at Charles Center Plaza." The Proposal provides further details passenger service later in their text. While this goes beyond what I suggested in my earlier comments, this idea has a great deal of merit, especially as part of the holistic analysis in the Proposal. While I think it may be possible to make infrastructure exceptions to allow some AMTRAK trains to access Penn Station, improved service to a Charles Center Plaza station could well be a better alternative for Baltimore. The city would maintain its place of importance in regional intercity rail service. Taking an intracity train from Penn Station to the new Charles Center Plaza station to catch an intercity train would be very feasible. It is exactly analogous to my travels in Florence, Italy last summer, when I had to take a local train to meet the train to Verona. Wouldn't it be nice to be able to say Baltimore had a train system that worked like a European city? The important point here is that the infrastructure required to support efficient and effective intercity rail service needs to be explicit

COMMENTS

RESPONSES

before four billion dollar rail tunnels are designed and built. That is not the case with the B&P Tunnel Project DEIS, and that is further evidence of error in the DEIS.

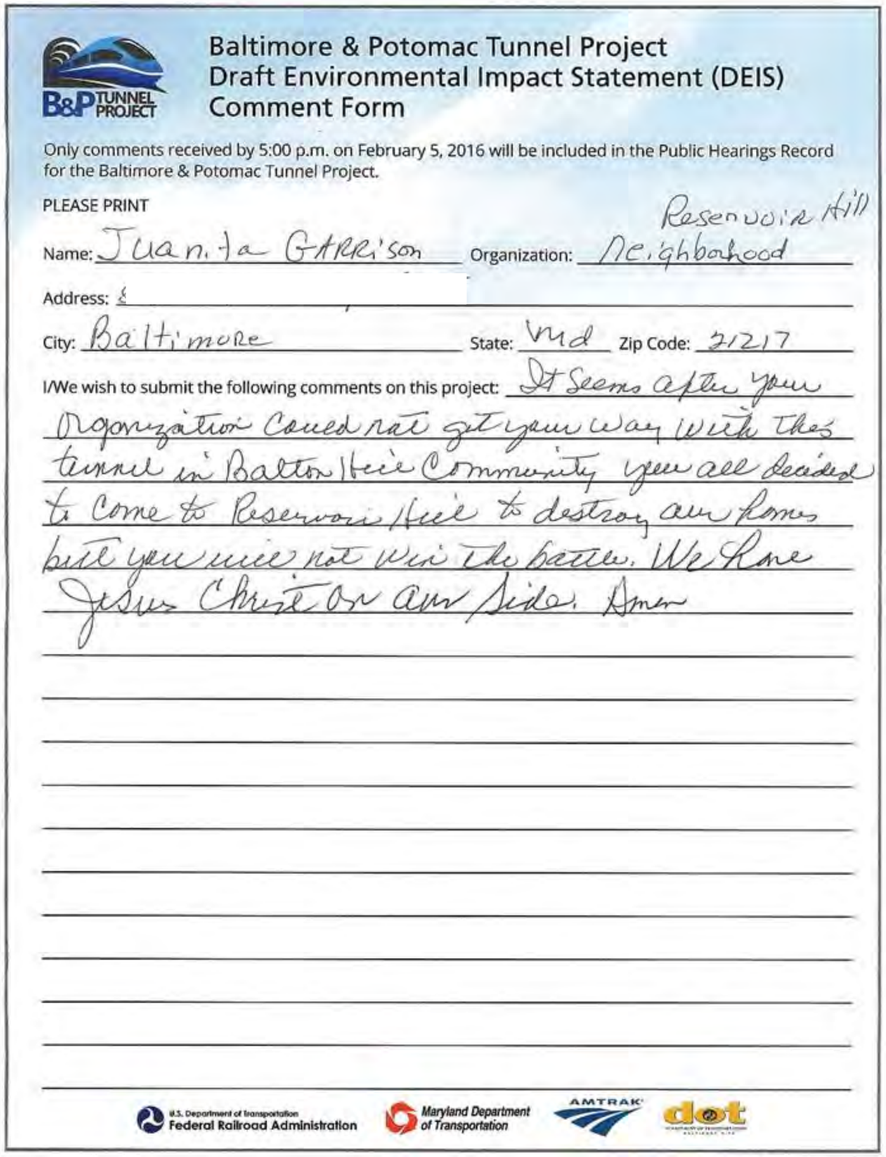
Fourth, the Advisory Committee Proposal, as a result of its holistic approach and its unpacking of conflicts, looks at the rail lines considered in the B&P Tunnel Project DEIS and calls to "rebuild the B&P and Union Tunnels for MARC access to Penn Station with several new stations along the line." (p. 4) The Advisory Committee Proposal continues, "This proposal eliminates the need for ... the Great Circle Tunnel into Penn Station. Cost saving to the state would be in the billions of dollars." (p. 12) While the social, cultural, and environmental justice impacts of the build alternatives in the DEIS probably have greater impact than the economic ones, it still would not be bad to save a few billion dollars from being spent erroneously. Again, the fact that beneficial alternatives, not using the Great Circle Route for the train tunnels, are available provides clear evidence that the B&P Tunnel Project DEIS is fundamentally and seriously flawed. These other alternatives, in the context of a system-wide analysis, need to be considered, and if considered objectively, it seems clear that they would be found superior to the build alternatives in the DEIS. These other alternatives, once studied and evaluated, could be recommended for further analysis and engineering design.

It is hard to fathom why and how the B&P Tunnel Project did not pursue a system-wide analysis that would have addressed many of the issues in the Advisory Committee Proposal, in my earlier comments on the DEIS, and in much of the evidence provided in the Public Hearing process for the DEIS. Almost all of the evidence provided was in opposition to the DEIS, and it appears that the dissenting public has been, in part, responding negatively to the myopic process and short-sighted conclusions of the B&P Tunnel Project, its staff, and presumably, its management. The only alternative in the current DEIS which is worthy of recommendation is the "do nothing" alternative. That would allow a responsible reevaluation, hopefully as part of a holistic analysis, with the potential to arrive at an alternative which could gain the support of local residents while providing for world class rail service on the Northeast Corridor. The Advisory Committee Proposal notes that, with their plan, they "ensure economical, integrated future expansion rather than haphazard, costly, inefficient, and ineffective, project focused expansion." (p. 12) That is their objective, that is my objective, and I hope the B&P Tunnel Project will conclude that they have erred in this regard to date and make it their objective.

James L. Floyd
P.E., Ret. Baltimore, MD 21217

COMMENTS

DEIS Comment 41:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Juanita GARRison
Organization: Reservoir Hill Neighborhood
Address: [redacted]
City: Baltimore
State: Md
Zip Code: 21217

I/We wish to submit the following comments on this project: It Seems after your
1 Organization Could not get your Way with this
tunnel in Balton Hill Community you all decided
2 to Come to Reservoir Hill to destroy our homes
but you will not win the battle. We have
Jesus Christ On our Side. Amen

U.S. Department of Transportation Federal Railroad Administration · Maryland Department of Transportation · AMTRAK · dot

RESPONSES

Response to Comment 1:
The existing B&P Tunnel tracks are in Bolton Hill. Options as to where the new B&P Tunnel should reside are limited. Due to the geography and the shallowness of the area beneath Bolton Hill, this area was not a feasible option for the proposed Tunnel, whereas the area underneath Reservoir Hill is deeper and more practicable.

As described in **Chapter III** of the FEIS, Alternative 2: Reconstruct/Modernize Existing Tunnel was eliminated from further consideration for specific engineering and operational reasons. Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including:

- Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction;
- No parking along Wilson Street or Winchester Street during construction;
- Limitations for residential and commercial access along Wilson Street and Winchester Street during construction;
- Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park;
- Substantial residential property impacts; and
- Severe impacts to North Avenue, central Light Rail line, and CSX Main Line operations due to open cut construction through North Avenue, light rail, and CSX track beds.

Additionally, for construction to advance, at minimum, one track would have to be removed from service. It would be impossible to provide adequate NEC service using a single track, particularly as ridership and train frequency increase over time.

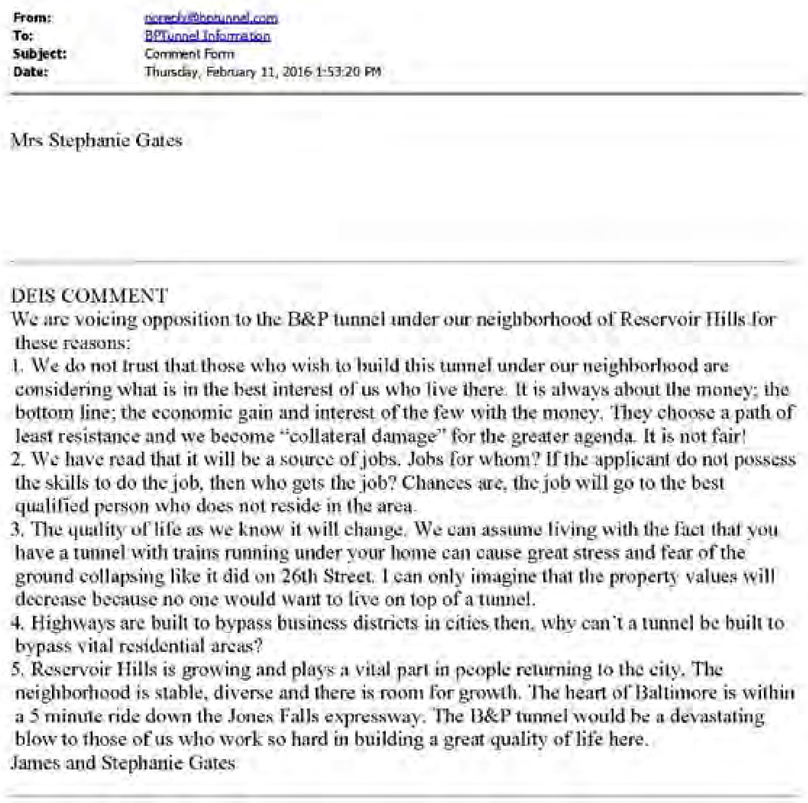
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering

COMMENTS	RESPONSES
	issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative. **Response to Comment 2:** Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility. For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

COMMENTS

DEIS Comment 42:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Thursday, February 11, 2016 1:53:20 PM

Mrs Stephanie Gates

DEIS COMMENT

We are voicing opposition to the B&P tunnel under our neighborhood of Reservoir Hills for these reasons:

1 1. We do not trust that those who wish to build this tunnel under our neighborhood are considering what is in the best interest of us who live there. It is always about the money; the bottom line; the economic gain and interest of the few with the money. They choose a path of least resistance and we become "collateral damage" for the greater agenda. It is not fair!

2 2. We have read that it will be a source of jobs. Jobs for whom? If the applicant do not possess the skills to do the job, then who gets the job? Chances are, the job will go to the best qualified person who does not reside in the area.

3 3. The quality of life as we know it will change. We can assume living with the fact that you have a tunnel with trains running under your home can cause great stress and fear of the ground collapsing like it did on 26th Street. I can only imagine that the property values will decrease because no one would want to live on top of a tunnel.

4 4. Highways are built to bypass business districts in cities then, why can`t a tunnel be built to bypass vital residential areas?

5. Reservoir Hills is growing and plays a vital part in people returning to the city. The neighborhood is stable, diverse and there is room for growth. The heart of Baltimore is within a 5 minute ride down the Jones Falls expressway. The B&P tunnel would be a devastating blow to those of us who work so hard in building a great quality of life here.

James and Stephanie Gates

RESPONSES

Response to Comment 1:

The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

Response to Comment 2:

As part of the mitigation efforts, the Project sponsor would provide coordination with local job training organizations to 1) facilitate targeted job training by providing estimates of the type, number, and timing of jobs expected to be created by project contractors, 2) include in construction contracts goals for nationally targeted workers of social and economic disadvantage, and 3) require project contractors to report on a regular basis their progress in meeting contract goals. The Project sponsor will provide public reporting on job creation. These efforts are ongoing and are documented in this FEIS as described in **Chapter VI**.

Response to Comment 3:

All of the proposed Project infrastructure will be designed, constructed, and maintained using proven modern design and safety standards. The Project will be designed in accordance with applicable regulations, oversight agency guidance, and knowledge of safety standards to ensure optimal safety. The build alternatives will have an average tunnel depth of 115 feet.

The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Response to Comment 4:

The Project has been planned mostly underground in order to avoid greater impacts to the community.

Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated

COMMENTS	RESPONSES
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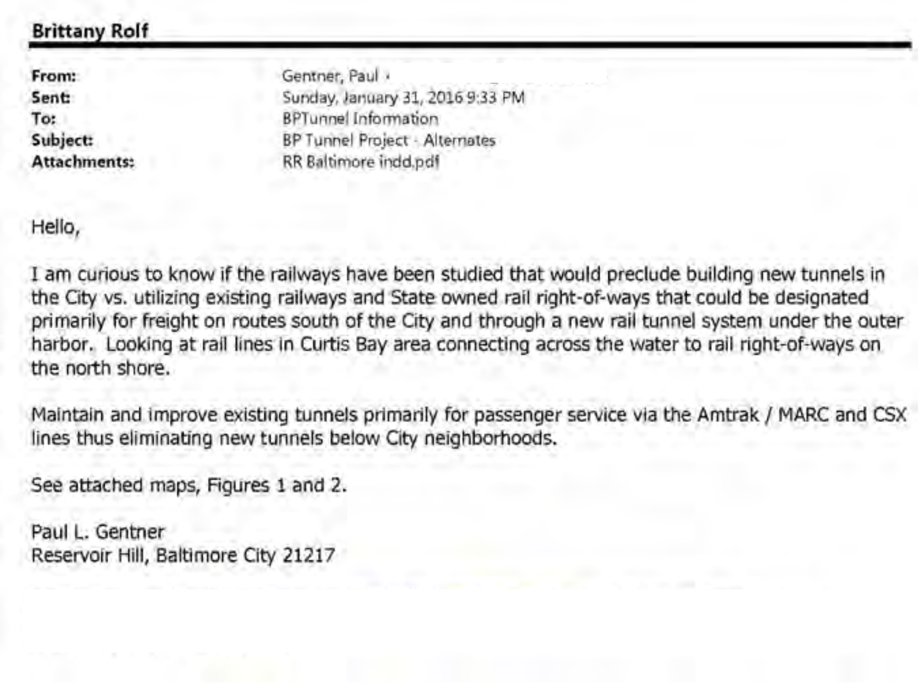
COMMENTS

DEIS Comment 43:



Brittany Rolf

From: Gentner, Paul
Sent: Sunday, January 31, 2016 9:33 PM
To: BPTunnel Information
Subject: BP Tunnel Project - Alternates
Attachments: RR Baltimore indd.pdf

Hello,

1 I am curious to know if the railways have been studied that would preclude building new tunnels in the City vs. utilizing existing railways and State owned rail right-of-ways that could be designated primarily for freight on routes south of the City and through a new rail tunnel system under the outer harbor. Looking at rail lines in Curtis Bay area connecting across the water to rail right-of-ways on the north shore.

Maintain and improve existing tunnels primarily for passenger service via the Amtrak / MARC and CSX lines thus eliminating new tunnels below City neighborhoods.

See attached maps, Figures 1 and 2.

Paul L. Gentner
Reservoir Hill, Baltimore City 21217

RESPONSES

Response to Comment 1:
The Maryland Department of Transportation oversees comprehensive transportation planning for the State. Prior studies have been performed that evaluate the full network of rail corridors, especially those in and around the City of Baltimore. The study of the B&P Tunnel partly resulted from the identification of this Project as a critical component to the greater rail access plan.

A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

As described in **Chapter III** of the FEIS, Alternative 2: Reconstruct/Modernize Existing Tunnel was eliminated from further consideration for specific engineering and operational reasons. Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including:

- Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction;
- No parking along Wilson Street or Winchester Street during construction;
- Limitations for residential and commercial access along Wilson Street and Winchester Street during construction;
- Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park;
- Substantial residential property impacts; and
- Severe impacts to North Avenue, central Light Rail line, and CSX Main Line operations due to open cut construction through North Avenue, light rail, and CSX track beds.

COMMENTS

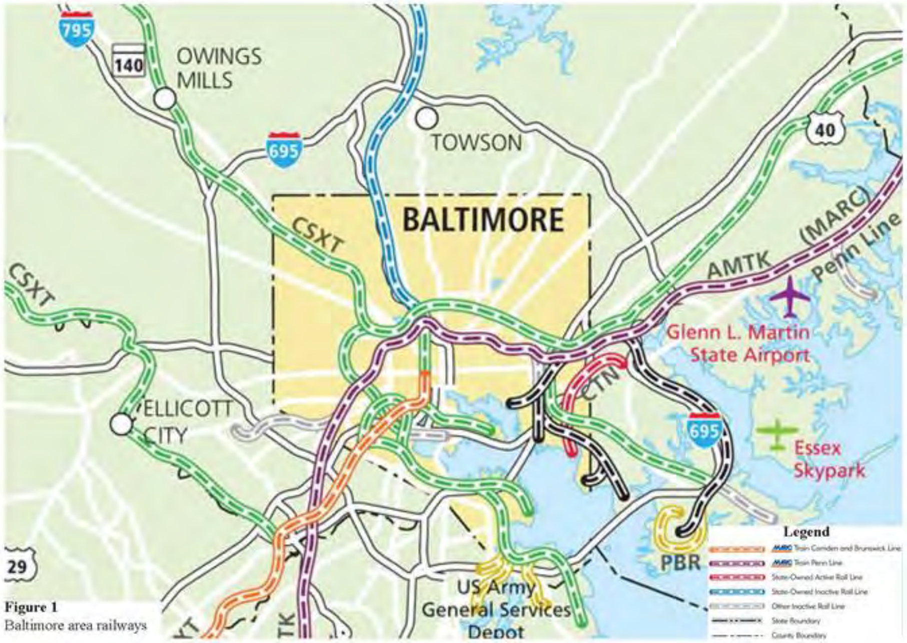


Figure 1
Baltimore area railways

RESPONSES

Additionally, for construction to advance, at minimum, one track would have to be removed from service. It would be impossible to provide adequate NEC service using a single track, particularly as ridership and train frequency increase over time.

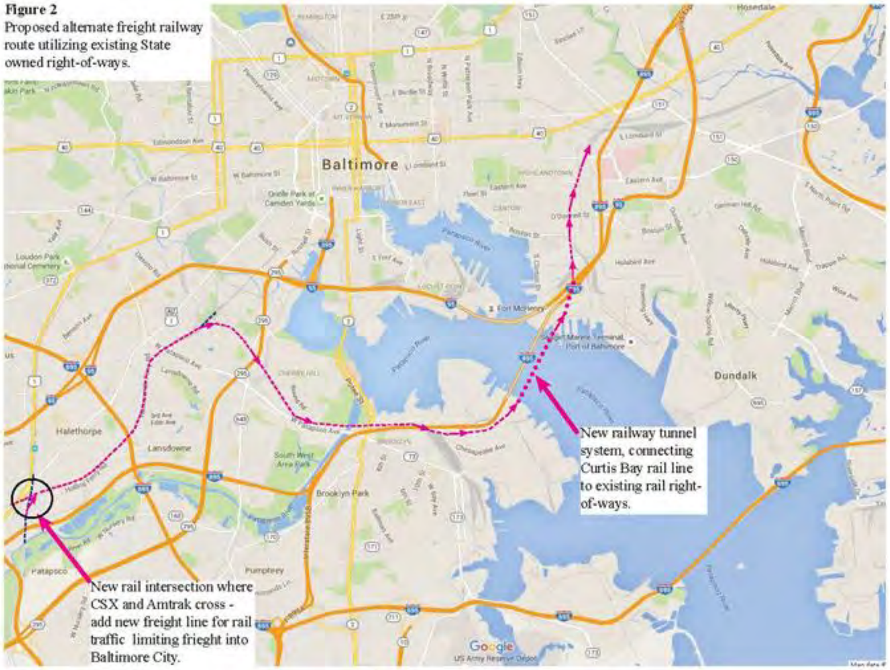


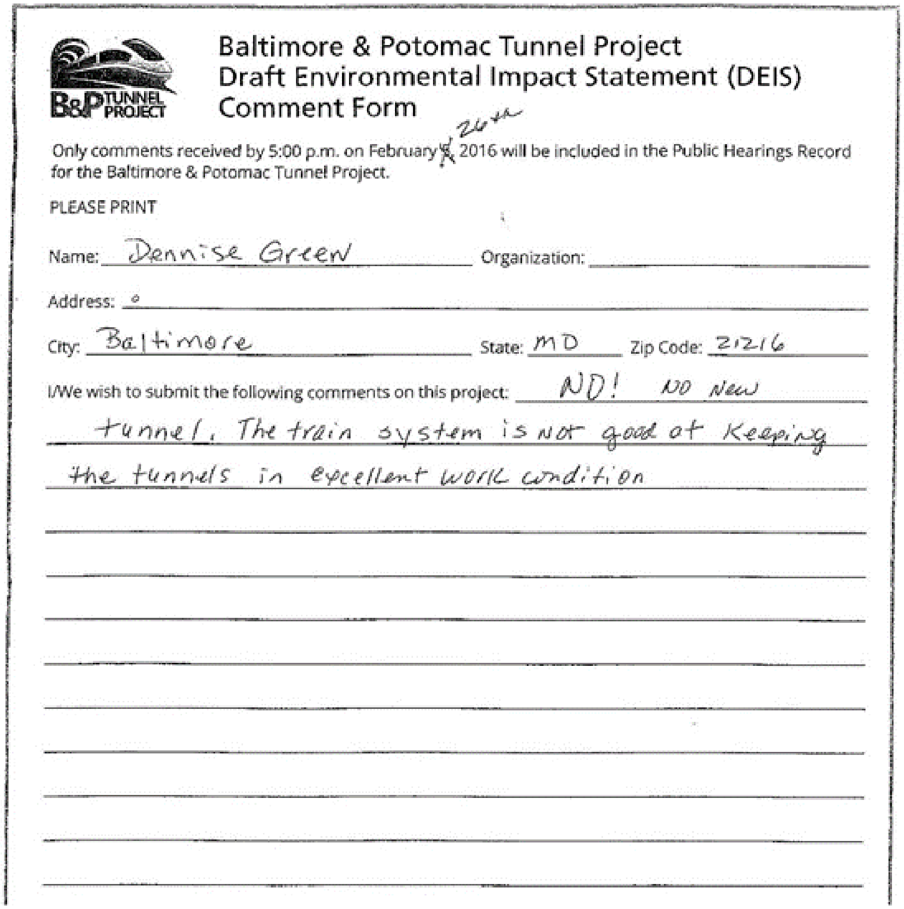
Figure 2
Proposed alternate freight railway route utilizing existing State owned right-of-ways.

New railway tunnel system, connecting Curtis Bay rail line to existing rail right-of-ways.

New rail intersection where CSX and Amtrak cross - add new freight line for rail traffic limiting frieght into Baltimore City.

COMMENTS

DEIS Comment 44:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February ~~8~~ 24th 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Dennise Green Organization:

Address: °

City: Baltimore State: MD Zip Code: 21216

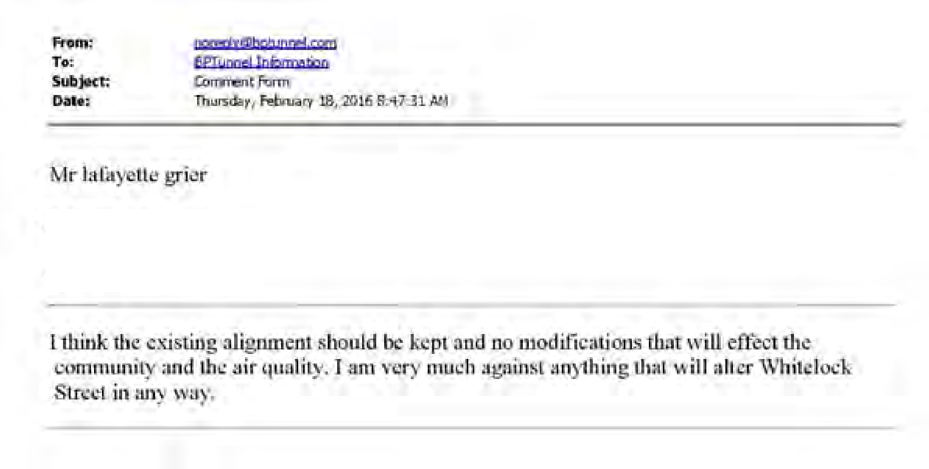
1 I/We wish to submit the following comments on this project: ND! NO New tunnel. The train system is not good of Keeping the tunnels in excellent work condition

RESPONSES

Response to Comment 1:
The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

COMMENTS

DEIS Comment 45:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Thursday, February 18, 2016 8:47:31 AM

Mr lafayette grier

1 I think the existing alignment should be kept and no modifications that will effect the community and the air quality. I am very much against anything that will alter Whitelock Street in any way.

RESPONSES

Response to Comment 1:

As described in **Chapter III** of the FEIS, Alternative 2: Reconstruct/Modernize Existing Tunnel was eliminated from further consideration for specific engineering and operational reasons. Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including:

- Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction;
- No parking along Wilson Street or Winchester Street during construction;
- Limitations for residential and commercial access along Wilson Street and Winchester Street during construction;
- Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park;
- Substantial residential property impacts; and
- Severe impacts to North Avenue, central Light Rail line, and CSX Main Line operations due to open cut construction through North Avenue, light rail, and CSX track beds.

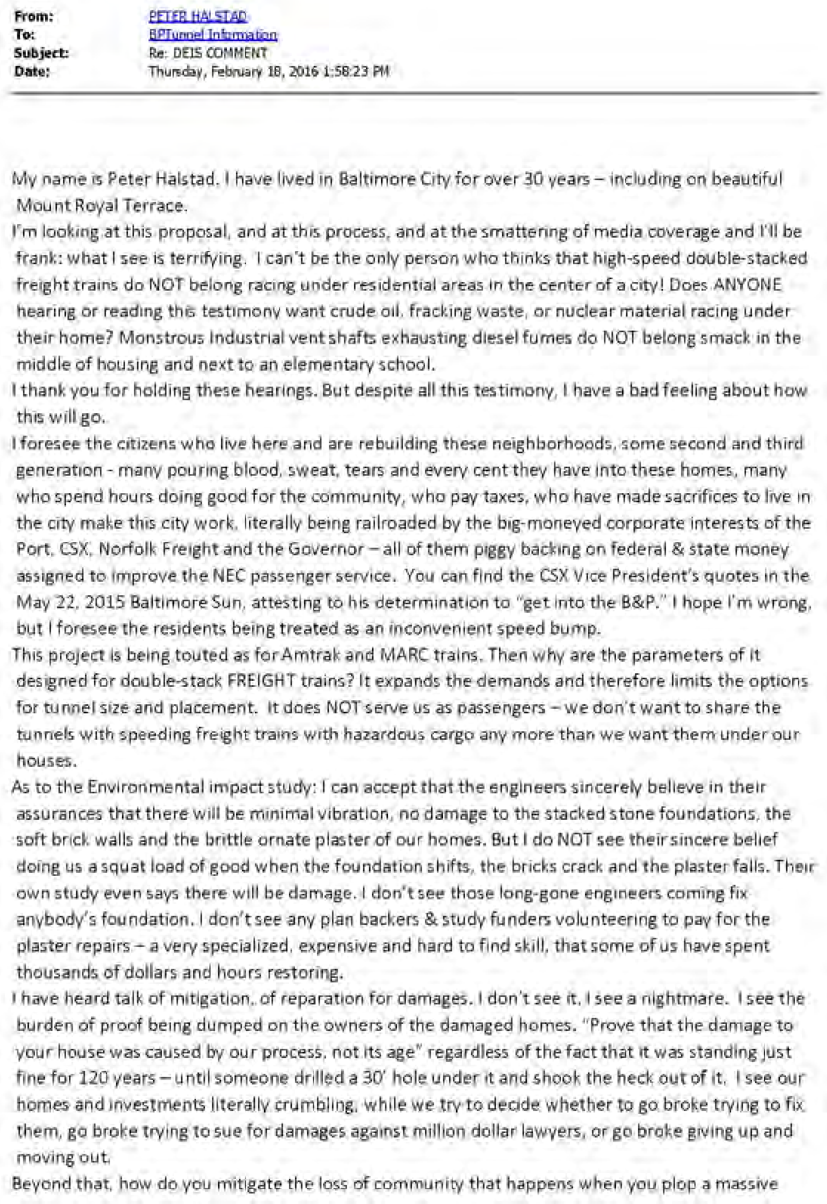
Additionally, for construction to advance, at minimum, one track would have to be removed from service. It would be impossible to provide adequate NEC service using a single track, particularly as ridership and train frequency increase over time.

No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

DEIS Comment 46:



From: PETER HALSTAD
To: BPTunnel Information
Subject: Re: DEIS COMMENT
Date: Thursday, February 18, 2016 1:58:23 PM

My name is Peter Halstad. I have lived in Baltimore City for over 30 years – including on beautiful
Mount Royal Terrace.
I'm looking at this proposal, and at this process, and at the smattering of media coverage and I'll be
1 frank: what I see is terrifying. I can't be the only person who thinks that high-speed double-stacked
freight trains do NOT belong racing under residential areas in the center of a city! Does ANYONE
hearing or reading this testimony want crude oil, fracking waste, or nuclear material racing under
2 their home? Monstrous Industrial vent shafts exhausting diesel fumes do NOT belong smack in the
middle of housing and next to an elementary school.
I thank you for holding these hearings. But despite all this testimony, I have a bad feeling about how
this will go.
I foresee the citizens who live here and are rebuilding these neighborhoods, some second and third
generation - many pouring blood, sweat, tears and every cent they have into these homes, many
who spend hours doing good for the community, who pay taxes, who have made sacrifices to live in
the city make this city work, literally being railroaded by the big-moneyed corporate interests of the
Port, CSX, Norfolk Freight and the Governor – all of them piggy backing on federal & state money
3 assigned to improve the NEC passenger service. You can find the CSX Vice President's quotes in the
May 22, 2015 Baltimore Sun, attesting to his determination to "get into the B&P." I hope I'm wrong,
but I foresee the residents being treated as an inconvenient speed bump.
This project is being touted as for Amtrak and MARC trains. Then why are the parameters of it
designed for double-stack FREIGHT trains? It expands the demands and therefore limits the options
1 for tunnel size and placement. It does NOT serve us as passengers – we don't want to share the
tunnels with speeding freight trains with hazardous cargo any more than we want them under our
houses.
As to the Environmental impact study: I can accept that the engineers sincerely believe in their
assurances that there will be minimal vibration, no damage to the stacked stone foundations, the
4 soft brick walls and the brittle ornate plaster of our homes. But I do NOT see their sincere belief
doing us a squat load of good when the foundation shifts, the bricks crack and the plaster falls. Their
own study even says there will be damage. I don't see those long-gone engineers coming fix
anybody's foundation. I don't see any plan backers & study funders volunteering to pay for the
plaster repairs – a very specialized, expensive and hard to find skill, that some of us have spent
thousands of dollars and hours restoring.
I have heard talk of mitigation, of reparation for damages. I don't see it. I see a nightmare. I see the
5 burden of proof being dumped on the owners of the damaged homes. "Prove that the damage to
your house was caused by our process, not its age" regardless of the fact that it was standing just
fine for 120 years – until someone drilled a 30' hole under it and shook the heck out of it. I see our
homes and investments literally crumbling, while we try to decide whether to go broke trying to fix
them, go broke trying to sue for damages against million dollar lawyers, or go broke giving up and
moving out.
Beyond that, how do you mitigate the loss of community that happens when you plop a massive

RESPONSES

Response to Comment 1:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

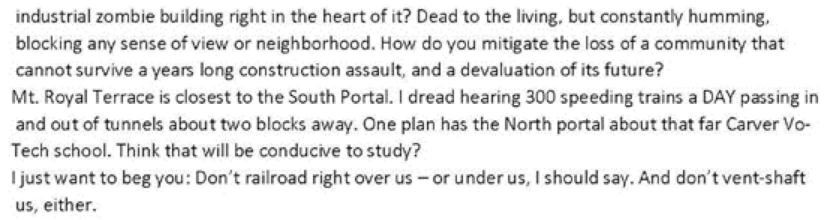
Amtrak design practices require new NEC infrastructure meet current standards, including Plate H (double stack) clearances. However, the new tunnel could not be used by double stack freight trains unless certain factors are met. These factors include:

- Substantial improvements, such as extensive additional vertical clearance improvements north and south of the B&P Tunnel to other NEC infrastructure; these improvements are not being designed as part of the B&P Project;
- Federal, state, local and regional support for aforementioned improvements including funding and policy;
- Increasing the bridge and catenary clearance on the NEC where double stack/high dimension trains are to travel;
- Construction of new or modified Union tunnel to Plate H/K (double stack) clearances; without a high dimension Union tunnel, double stack freight service using the B&P Tunnel is not possible;
- NS currently favors the Harrisburg-Perryville route for intermodal service;
- Freight schedules limited to off peak/night time periods which affects the scheduling flexibility and transit time for high priority (Intermodal) shipments for which time is absolutely critical; and
- Construction of track connection/s between the CSX and the NEC if CSX chooses to use the NEC.

In the short-term, there is no indication of any significant increase in freight movements through the B&P Tunnel.

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable

COMMENTS



6 industrial zombie building right in the heart of it? Dead to the living, but constantly humming, blocking any sense of view or neighborhood. How do you mitigate the loss of a community that cannot survive a years long construction assault, and a devaluation of its future?

Mt. Royal Terrace is closest to the South Portal. I dread hearing 300 speeding trains a DAY passing in and out of tunnels about two blocks away. One plan has the North portal about that far Carver Vo-Tech school. Think that will be conducive to study?

I just want to beg you: Don't railroad right over us – or under us, I should say. And don't vent-shaft us, either.

RESPONSES

materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *__https://www.fra.dot.gov/Page/P0444__*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Response to Comment 2:

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2

COMMENTS

RESPONSES

concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

Response to Comment 3:
The Project Team has engaged in extensive public outreach throughout the development of the Project including three Public Open Houses, as well as ten community meetings where the public was given the opportunity to learn about the project development and engage in discussion with the Project Team. In addition to these meetings, Mitigation Working Groups comprising community organization representatives and members of the Project Team were established to determine the most effective mitigation for the Project. Details of this outreach are described in **Chapter VI**, as well as **Chapter VIII.**

Response to Comment 4:
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using analysis procedures from the *FTA Transit Noise and Vibration Impact Assessment.* Construction vibration levels were also evaluated using both FTA guidelines and standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

COMMENTS	RESPONSES
	Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold. All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI**. **Response to Comment 5:** The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be fully compensated for the cost of repairs. The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS. **Response to Comment 6:** The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations

COMMENTS

RESPONSES

and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

The three ventilation plant facilities would be subject to the operational noise level standards included in the Noise Regulation of the Health Code of Baltimore City § 9-206 Noise Regulation, 2015. This regulation provides the noise limits for manufacturing, commercial, and residential zones in Baltimore City– depending on the source of noise and the types of adjacent land uses. For noise generated within residential zones, there is a limit of 55 dBA at any point on the property line of the use.

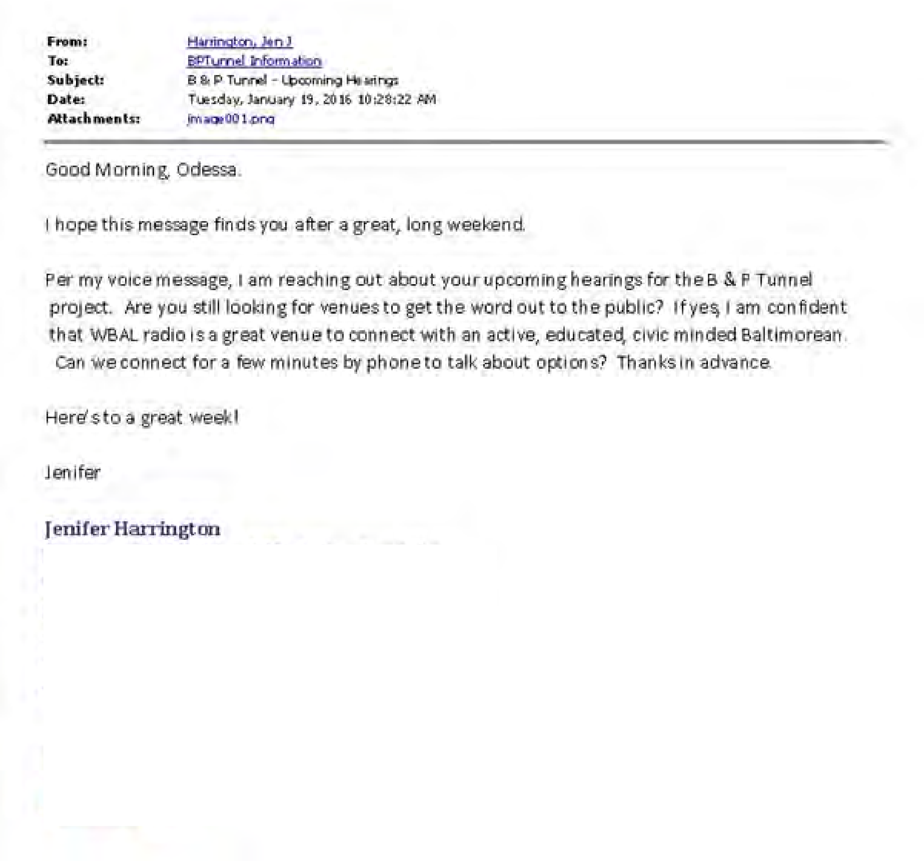
Noise levels in the immediate vicinity of the ventilation plant buildings would be caused by the continual operation of the ventilation fans within each facility. The horizontal fans would operate periodically and would generate sound that would propagate through the louvers at the top of the ventilation facilities. Fans would operate periodically when NO_2 levels in the tunnel exceed a set threshold or in emergencies when smoke is present in the tunnel. NO_2 levels are likely to be highest when the level of diesel locomotive operations is highest, or when congestion causes trains to operate slowly or to idle in the tunnel. However, there is not enough information currently available to determine how many hours per day, on average, the fans would run and whether or not they would run during the night.

The design standard for the ventilation facilities would limit the outdoor noise level, when the fans are in operation, to L_{max} 50 dBA at the facility property lines. 50 dBA is approximately the noise produced by an indoor air conditioner at a distance of three feet.

To achieve the required reduction in noise level, cylindrical or rectangular sound attenuators would be mounted directly to each fan or to the ductwork within the system. In addition, the building itself would partially shield noise from the interior of the ventilation plant, which would further reduce noise levels outside of the building. The Preliminary Engineering Team has stated that the ventilation plant facilities, with attenuators installed, will emit noise at 45 dBA. This would meet the design standard of L_{max} 50 dBA at the facility property lines (i.e., the noise level generated would be less than the design standard).

COMMENTS

DEIS Comment 47:



From: Harrington, Jen J
To: BPTunnel Information
Subject: B & P Tunnel - Upcoming Hearings
Date: Tuesday, January 19, 2016 10:28:22 AM
Attachments: image001.png

Good Morning, Odessa.

I hope this message finds you after a great, long weekend.

Per my voice message, I am reaching out about your upcoming hearings for the B & P Tunnel project. Are you still looking for venues to get the word out to the public? If yes, I am confident that WBAL radio is a great venue to connect with an active, educated, civic minded Baltimorean. Can we connect for a few minutes by phone to talk about options? Thanks in advance.

Here's to a great week!

Jenifer

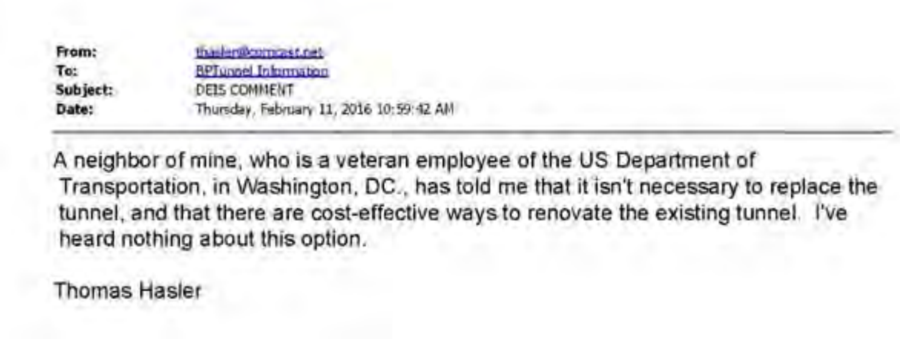
Jenifer Harrington

RESPONSES

Thank you for your comment.

COMMENTS

DEIS Comment 48:



From: thasler@comcast.net
To: BPTunnel Information
Subject: DEIS COMMENT
Date: Thursday, February 11, 2016 10:59:42 AM

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1 A neighbor of mine, who is a veteran employee of the US Department of Transportation, in Washington, DC., has told me that it isn't necessary to replace the tunnel, and that there are cost-effective ways to renovate the existing tunnel. I've heard nothing about this option.

Thomas Hasler

RESPONSES

Response to Comment 1:

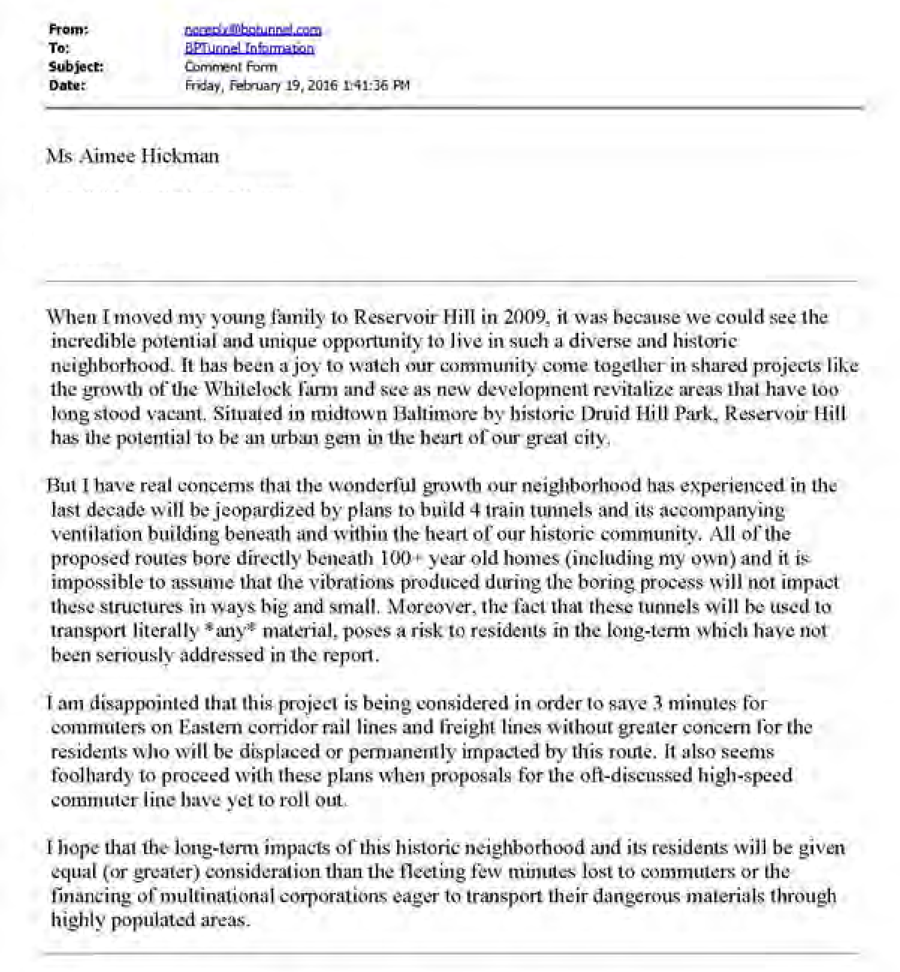
As described in **Chapter III** of the FEIS, Alternative 2: Reconstruct/Modernize Existing Tunnel was eliminated from further consideration for specific engineering and operational reasons. Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including:

- Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction;
- No parking along Wilson Street or Winchester Street during construction;
- Limitations for residential and commercial access along Wilson Street and Winchester Street during construction;
- Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park;
- Substantial residential property impacts; and
- Severe impacts to North Avenue, central Light Rail line, and CSX Main Line operations due to open cut construction through North Avenue, light rail, and CSX track beds.

Additionally, for construction to advance, at minimum, one track would have to be removed from service. It would be impossible to provide adequate NEC service using a single track, particularly as ridership and train frequency increase over time.

COMMENTS

DEIS Comment 49:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Friday, February 19, 2016 1:41:36 PM

Ms Aimee Hickman

When I moved my young family to Reservoir Hill in 2009, it was because we could see the incredible potential and unique opportunity to live in such a diverse and historic neighborhood. It has been a joy to watch our community come together in shared projects like the growth of the Whitelock farm and see as new development revitalize areas that have too long stood vacant. Situated in midtown Baltimore by historic Druid Hill Park, Reservoir Hill has the potential to be an urban gem in the heart of our great city.

1 But I have real concerns that the wonderful growth our neighborhood has experienced in the last decade will be jeopardized by plans to build 4 train tunnels and its accompanying ventilation building beneath and within the heart of our historic community. All of the 2 proposed routes bore directly beneath 100+ year old homes (including my own) and it is impossible to assume that the vibrations produced during the boring process will not impact these structures in ways big and small. Moreover, the fact that these tunnels will be used to 3 transport literally *any* material, poses a risk to residents in the long-term which have not been seriously addressed in the report.

4 I am disappointed that this project is being considered in order to save 3 minutes for commuters on Eastern corridor rail lines and freight lines without greater concern for the residents who will be displaced or permanently impacted by this route. It also seems foolhardy to proceed with these plans when proposals for the oft-discussed high-speed commuter line have yet to roll out.

5 I hope that the long-term impacts of this historic neighborhood and its residents will be given equal (or greater) consideration than the fleeting few minutes lost to commuters or the financing of multinational corporations eager to transport their dangerous materials through highly populated areas.

RESPONSES

Response to Comment 1:
Consistent with Northeast Corridor (NEC) long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 2:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

Response to Comment 3:
NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel

COMMENTS	RESPONSES

subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at ***https://www.fra.dot.gov/Page/P0444***. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

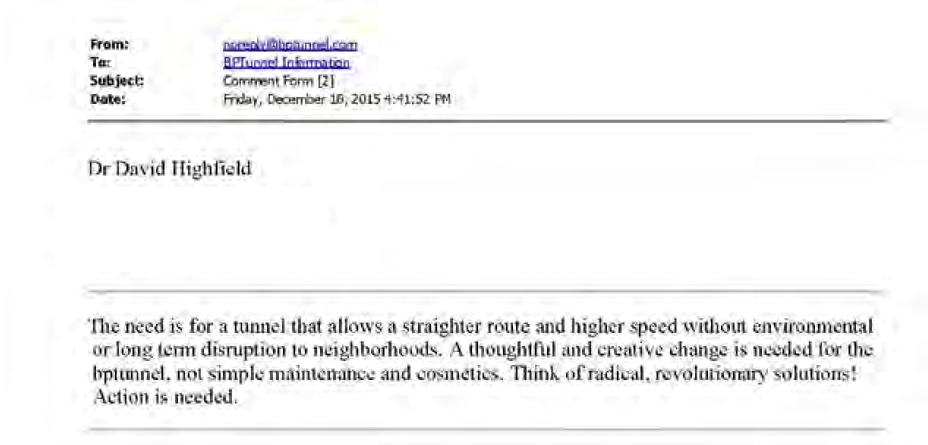
Response to Comment 4:
While reducing travel time through B&P Tunnel and along the NEC is a goal of the Project, it is not the sole reason the Project was initiated. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS. Project goals include reducing travel time through the B&P Tunnel and along the NEC, accommodating existing and projected travel demand for intercity and commuter passenger services, eliminating impediments to existing and projected operations along the NEC, and providing operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure

Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the

COMMENTS	RESPONSES
	Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility. For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**. **Response to Comment 5:** The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

DEIS Comment 50:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form [2]
Date: Friday, December 18, 2015 4:41:52 PM

Dr David Highfield

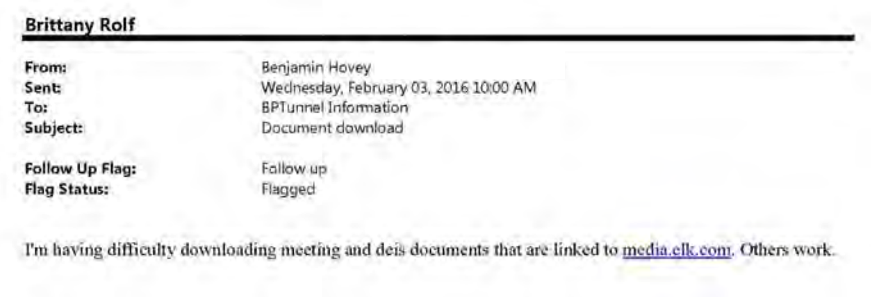
1 The need is for a tunnel that allows a straighter route and higher speed without environmental or long term disruption to neighborhoods. A thoughtful and creative change is needed for the bptunnel, not simple maintenance and cosmetics. Think of radical, revolutionary solutions! Action is needed.

RESPONSES

Response to Comment 1:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 51:



Brittany Rolf

From: Benjamin Hovey
Sent: Wednesday, February 03, 2016 10:00 AM
To: BPTunnel Information
Subject: Document download

Follow Up Flag: Follow up
Flag Status: Flagged

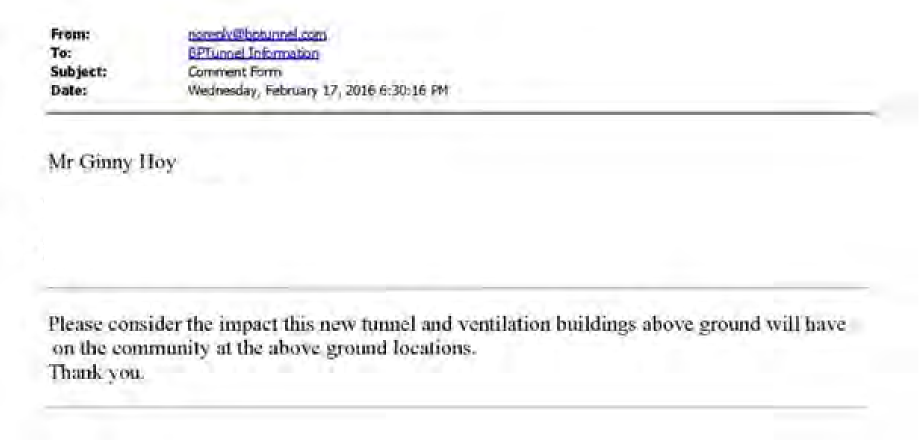
I'm having difficulty downloading meeting and deis documents that are linked to media.elk.com. Others work.

RESPONSES

Thank you for your comment.

COMMENTS

DEIS Comment 52:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Wednesday, February 17, 2016 6:30:16 PM

Mr Ginny Hoy

1 Please consider the impact this new tunnel and ventilation buildings above ground will have on the community at the above ground locations.
Thank you.

RESPONSES

Response to Comment 1:

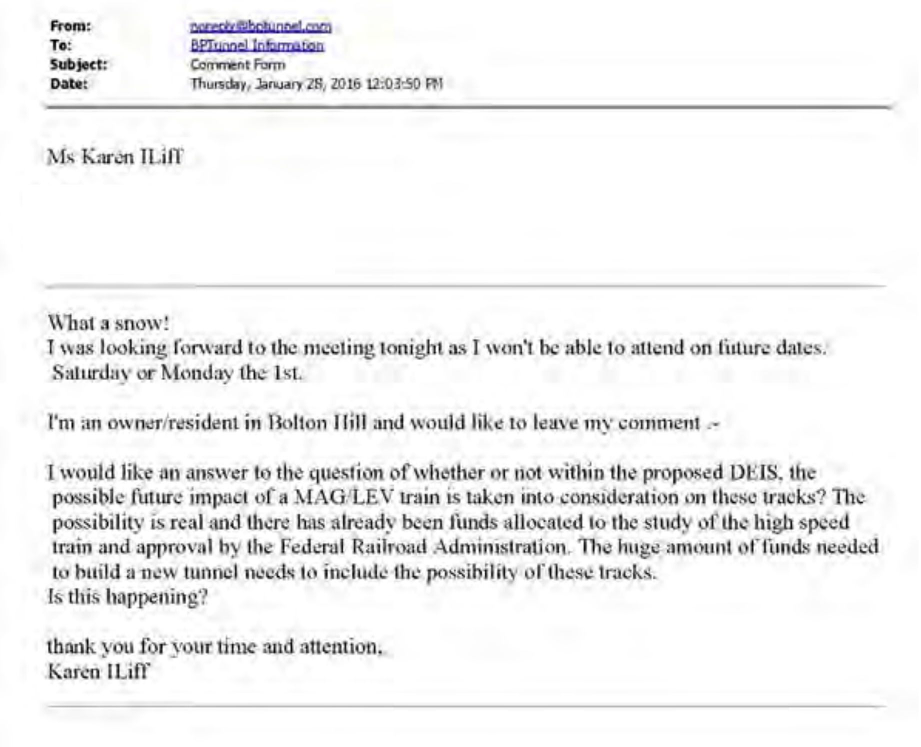
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

DEIS Comment 53:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Thursday, January 28, 2016 12:03:50 PM

Ms Karen ILiff

What a snow!
I was looking forward to the meeting tonight as I won't be able to attend on future dates.
Saturday or Monday the 1st.

I'm an owner/resident in Bolton Hill and would like to leave my comment --

1 I would like an answer to the question of whether or not within the proposed DEIS, the possible future impact of a MAG/LEV train is taken into consideration on these tracks? The possibility is real and there has already been funds allocated to the study of the high speed train and approval by the Federal Railroad Administration. The huge amount of funds needed to build a new tunnel needs to include the possibility of these tracks.
Is this happening?

thank you for your time and attention,
Karen ILiff

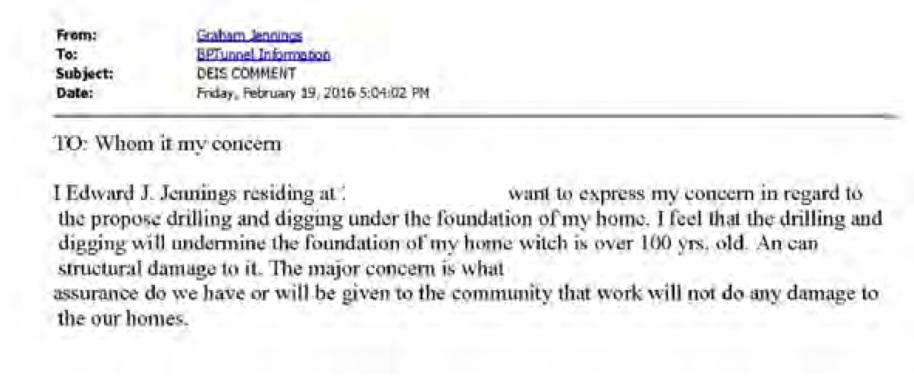
RESPONSES

Response to Comment 1:
A Maglev train would not utilize existing or planned Amtrak infrastructure. The design of such a system requires significantly different rights-of-way and infrastructure. The design criteria for Maglev are extremely restrictive and would only be achievable on new alignments.

COMMENTS

RESPONSES

DEIS Comment 54:



From: Graham Jennings
To: BPTunnel Information
Subject: DEIS COMMENT
Date: Friday, February 19, 2016 5:04:02 PM

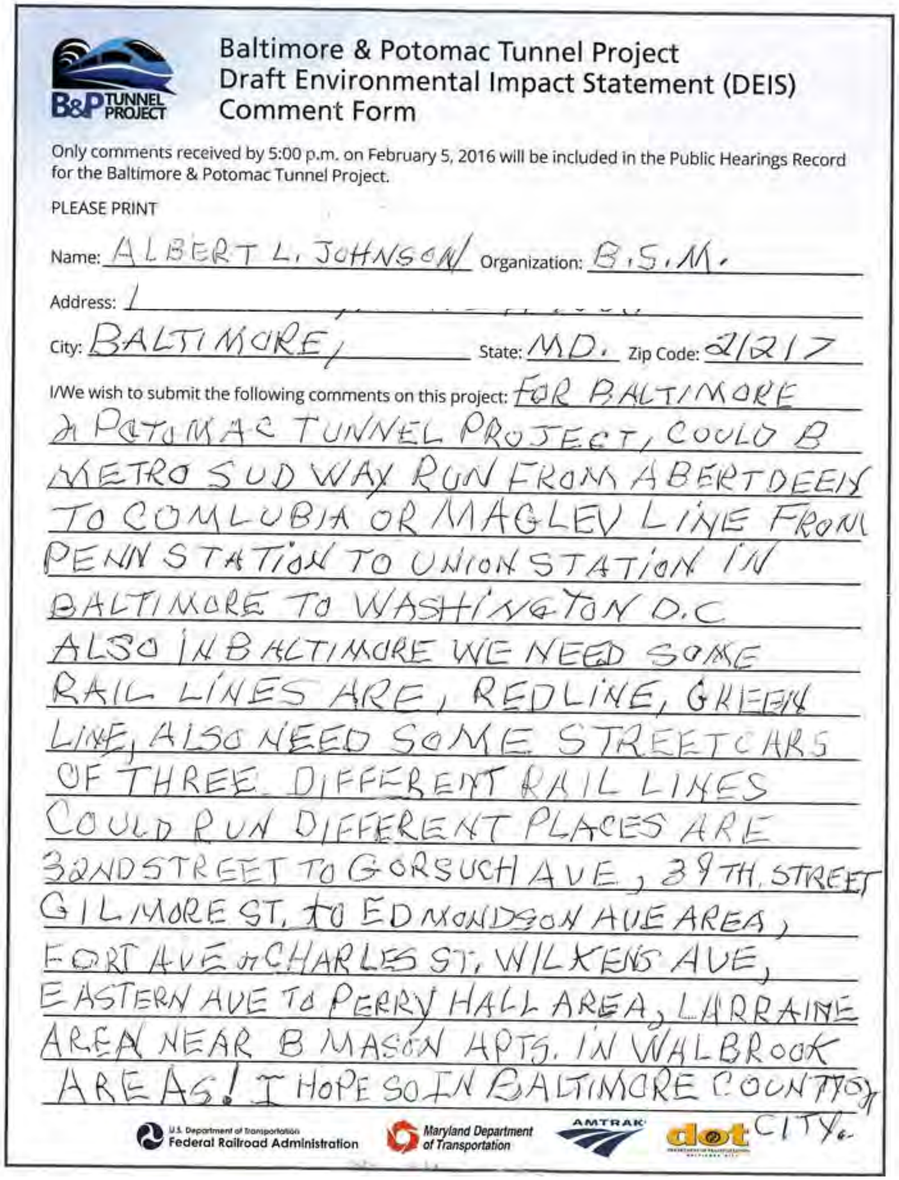
TO: Whom it my concern

1 I Edward J. Jennings residing at want to express my concern in regard to the propose drilling and digging under the foundation of my home. I feel that the drilling and digging will undermine the foundation of my home witch is over 100 yrs. old. An can structural damage to it. The major concern is what assurance do we have or will be given to the community that work will not do any damage to the our homes.

Response to Comment 1:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be fully compensated for the cost of repairs.

COMMENTS

DEIS Comment 55:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: ALBERT L. JOHNSON/ Organization: B.S.M.

Address: [redacted]

City: BALTIMORE, State: MD. Zip Code: 21217

1 I/We wish to submit the following comments on this project: FOR BALTIMORE & POTOMAC TUNNEL PROJECT, COULD B METRO SUD WAY RUN FROM ABERTDEEN TO COMLUBIA OR MAGLEV LINE FROM PENN STATION TO UNION STATION IN BALTIMORE TO WASHINGTON D.C ALSO IN BALTIMORE WE NEED SOME RAIL LINES ARE, REDLINE, GREEN LINE, ALSO NEED SOME STREETCARS OF THREE DIFFERENT RAIL LINES COULD RUN DIFFERENT PLACES ARE 32ND STREET TO GORSUCH AVE, 39TH. STREET GILMORE ST, TO EDMONDSON AVE AREA, FORT AVE or CHARLES ST, WILKENS AVE, EASTERN AVE TO PERRY HALL AREA, LARRAINE AREA NEAR B MASON APTS. IN WALBROOK AREAS! I HOPE SO IN BALTIMORE COUNTY or CITY.

U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK
dot

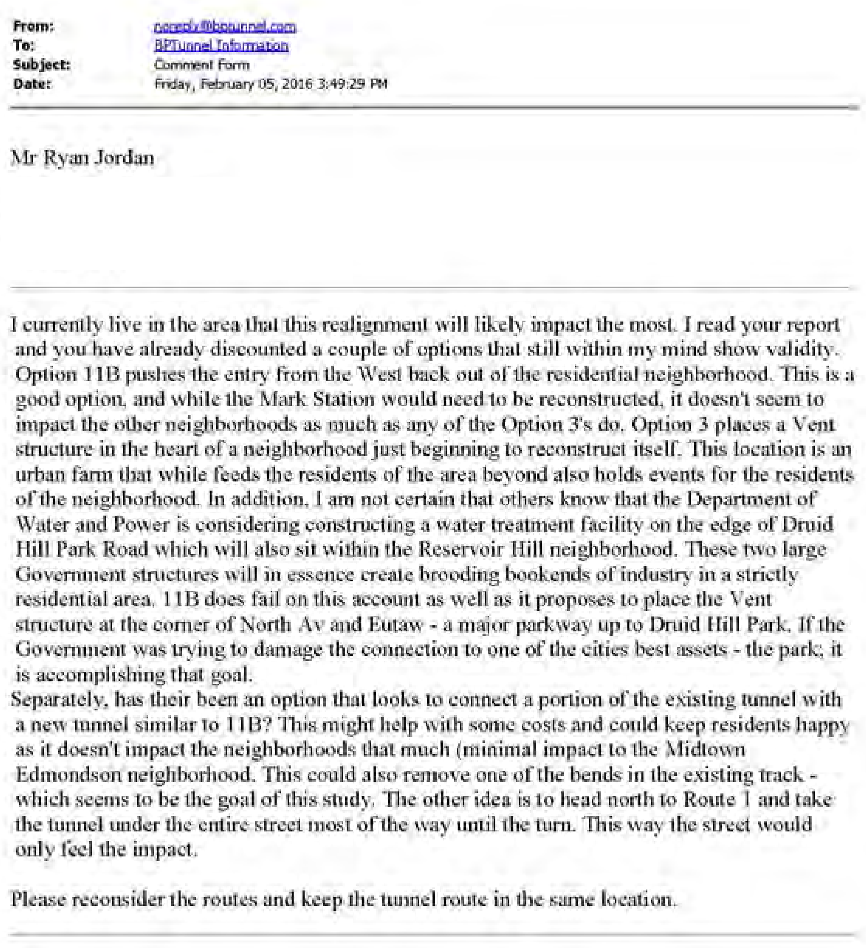
RESPONSES

Response to Comment 1:
This comment refers to regional rail planning and is beyond the purview of the B&P Tunnel Project. The Purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, including:

- Reducing travel time through the B&P Tunnel and along the NEC,
- Accommodating existing and projected travel demand for intercity and commuter passenger services,
- Eliminating impediments to existing and projected operations along the NEC, and
- Providing operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

COMMENTS

DEIS Comment 56:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Friday, February 05, 2016 3:49:29 PM

Mr Ryan Jordan

I currently live in the area that this realignment will likely impact the most. I read your report
and you have already discounted a couple of options that still within my mind show validity.
1 Option 11B pushes the entry from the West back out of the residential neighborhood. This is a
good option, and while the Mark Station would need to be reconstructed, it doesn't seem to
impact the other neighborhoods as much as any of the Option 3's do. Option 3 places a Vent
structure in the heart of a neighborhood just beginning to reconstruct itself. This location is an
urban farm that while feeds the residents of the area beyond also holds events for the residents
2 of the neighborhood. In addition, I am not certain that others know that the Department of
Water and Power is considering constructing a water treatment facility on the edge of Druid
Hill Park Road which will also sit within the Reservoir Hill neighborhood. These two large
Government structures will in essence create brooding bookends of industry in a strictly
residential area. 11B does fail on this account as well as it proposes to place the Vent
structure at the corner of North Av and Eutaw - a major parkway up to Druid Hill Park. If the
Government was trying to damage the connection to one of the cities best assets - the park; it
is accomplishing that goal.

Separately, has their been an option that looks to connect a portion of the existing tunnel with a new tunnel similar to 11B? This might help with some costs and could keep residents happy as it doesn't impact the neighborhoods that much (minimal impact to the Midtown Edmondson neighborhood. This could also remove one of the bends in the existing track - which seems to be the goal of this study. The other idea is to head north to Route 1 and take the tunnel under the entire street most of the way until the turn. This way the street would only feel the impact.

Please reconsider the routes and keep the tunnel route in the same location.

RESPONSES

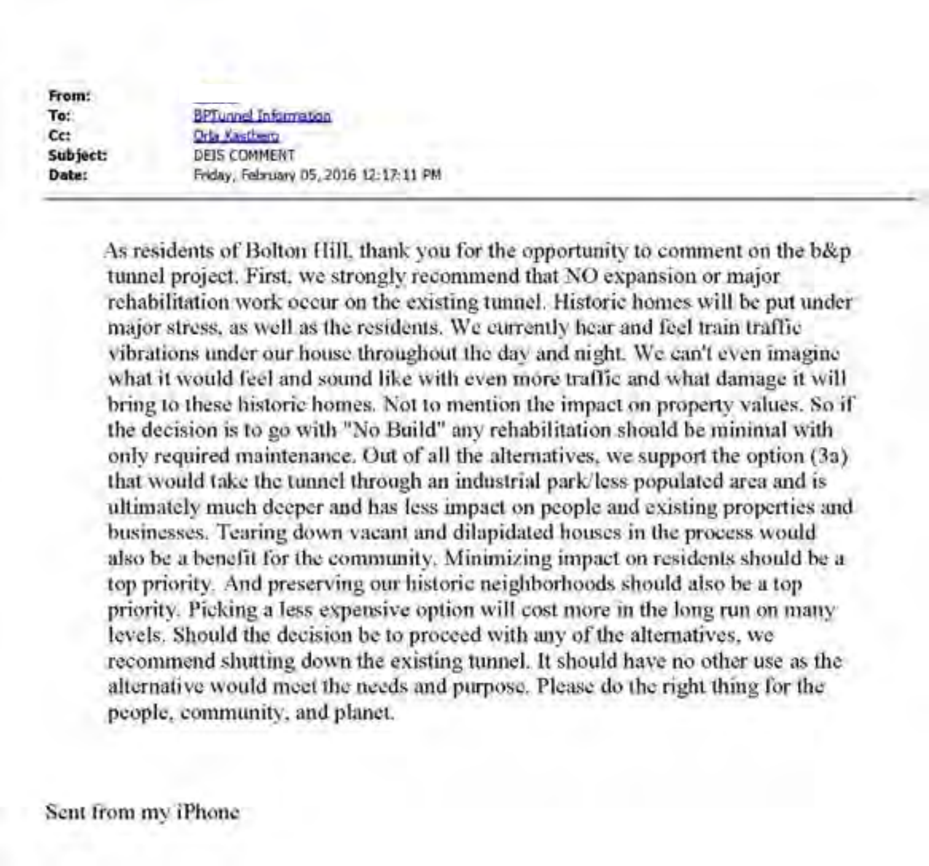
Response to Comment 1:
Alternative 11B would meet the Project's Purpose and Need; however, overall, the impacts associated with this alternative would not result in commensurate benefits when compared to the other alternatives. Specific reasons for the elimination of this alternative can be found in the *Alternatives Report*.

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

Response to Comment 2:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

DEIS Comment 57:



From: [redacted]
To: BPTunnel Information
Cc: Orla Kastberg
Subject: DEIS COMMENT
Date: Friday, February 05, 2016 12:17:11 PM

As residents of Bolton Hill, thank you for the opportunity to comment on the b&p
1 tunnel project. First, we strongly recommend that NO expansion or major
rehabilitation work occur on the existing tunnel. Historic homes will be put under
2 major stress, as well as the residents. We currently hear and feel train traffic
vibrations under our house throughout the day and night. We can't even imagine
what it would feel and sound like with even more traffic and what damage it will
bring to these historic homes. Not to mention the impact on property values. So if
the decision is to go with "No Build" any rehabilitation should be minimal with
only required maintenance. Out of all the alternatives, we support the option (3a)
that would take the tunnel through an industrial park/less populated area and is
ultimately much deeper and has less impact on people and existing properties and
businesses. Tearing down vacant and dilapidated houses in the process would
3 also be a benefit for the community. Minimizing impact on residents should be a
top priority. And preserving our historic neighborhoods should also be a top
priority. Picking a less expensive option will cost more in the long run on many
levels. Should the decision be to proceed with any of the alternatives, we
4 recommend shutting down the existing tunnel. It should have no other use as the
alternative would meet the needs and purpose. Please do the right thing for the
people, community, and planet.

Sent from my iPhone

RESPONSES

Response to Comment 1:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

Response to Comment 2:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM

COMMENTS

RESPONSES

would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

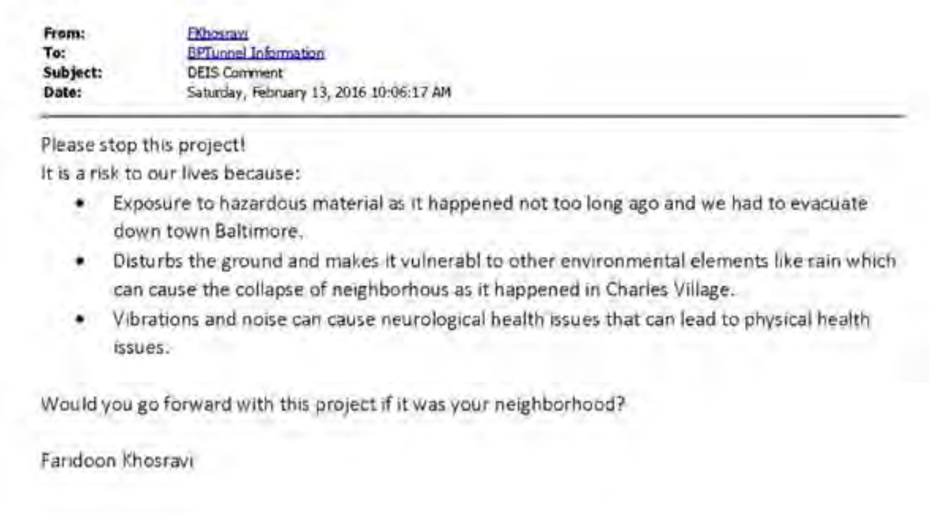
The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Response to Comment 3:
The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include

COMMENTS	RESPONSES
	historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**. **Response to Comment 4:** Amtrak desires to reserve the existing tunnel for a future rail transportation use.

COMMENTS

DEIS Comment 58:



From: FKhosravi
To: BPTunnel Information
Subject: DEIS Comment
Date: Saturday, February 13, 2016 10:06:17 AM

Please stop this project!

It is a risk to our lives because:

- 1 Exposure to hazardous material as it happened not too long ago and we had to evacuate down town Baltimore.
- 2 Disturbs the ground and makes it vulnerabl to other environmental elements like rain which can cause the collapse of neighborhous as it happened in Charles Village.
- 3 Vibrations and noise can cause neurological health issues that can lead to physical health issues.

Would you go forward with this project if it was your neighborhood?

Faridoon Khosravi

RESPONSES

Response to Comment 1:
NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

Response to Comment 2:
All of the proposed Project infrastructure will be designed, constructed, and maintained using proven modern design and safety standards. The Project will be designed in accordance with applicable regulations, oversight agency guidance, and knowledge of safety standards to ensure optimal safety.

Response to Comment 3:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

COMMENTS

RESPONSES

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

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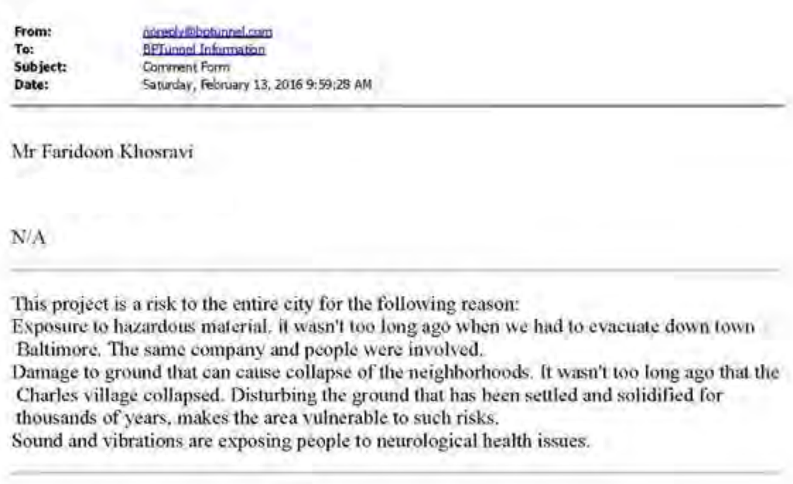
COMMENTS

DEIS Comment 59:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Saturday, February 13, 2016 9:59:28 AM

Mr Faridoon Khosravi

N/A

This project is a risk to the entire city for the following reason:
Exposure to hazardous material. it wasn't too long ago when we had to evacuate down town
1 Baltimore. The same company and people were involved.
2 Damage to ground that can cause collapse of the neighborhoods. It wasn't too long ago that the
Charles village collapsed. Disturbing the ground that has been settled and solidified for
thousands of years, makes the area vulnerable to such risks.
3 Sound and vibrations are exposing people to neurological health issues.

RESPONSES

Response to Comment 1:
NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

Response to Comment 2:
All of the proposed Project infrastructure will be designed, constructed, and maintained using proven modern design and safety standards. The Project will be designed in accordance with applicable regulations, oversight agency guidance, and knowledge of safety standards to ensure optimal safety.

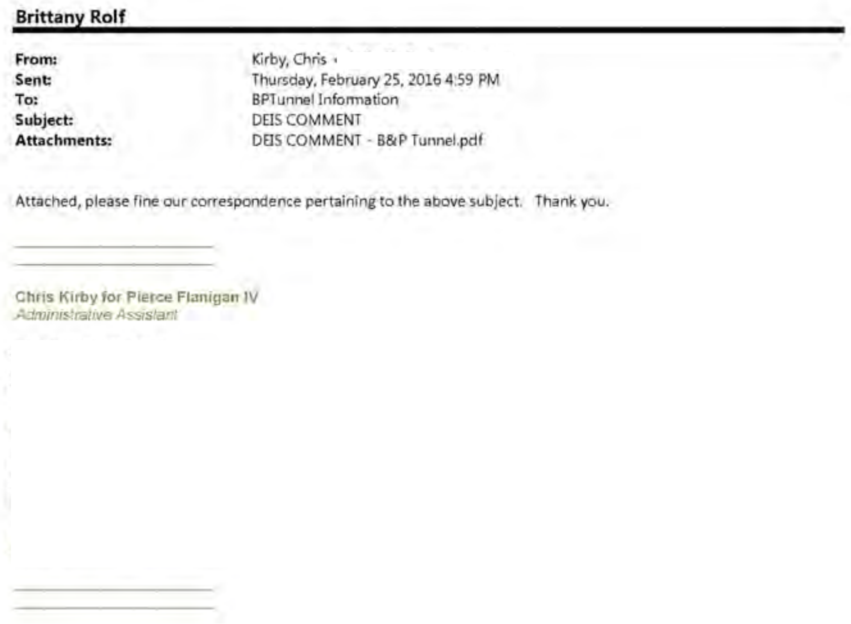
Response to Comment 3:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

COMMENTS	RESPONSES
	Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor. Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer. Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold. All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.** The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

COMMENTS	RESPONSES

DEIS Comment 60:



Brittany Rolf

From: Kirby, Chris
Sent: Thursday, February 25, 2016 4:59 PM
To: BPTunnel Information
Subject: DEIS COMMENT
Attachments: DEIS COMMENT - B&P Tunnel.pdf

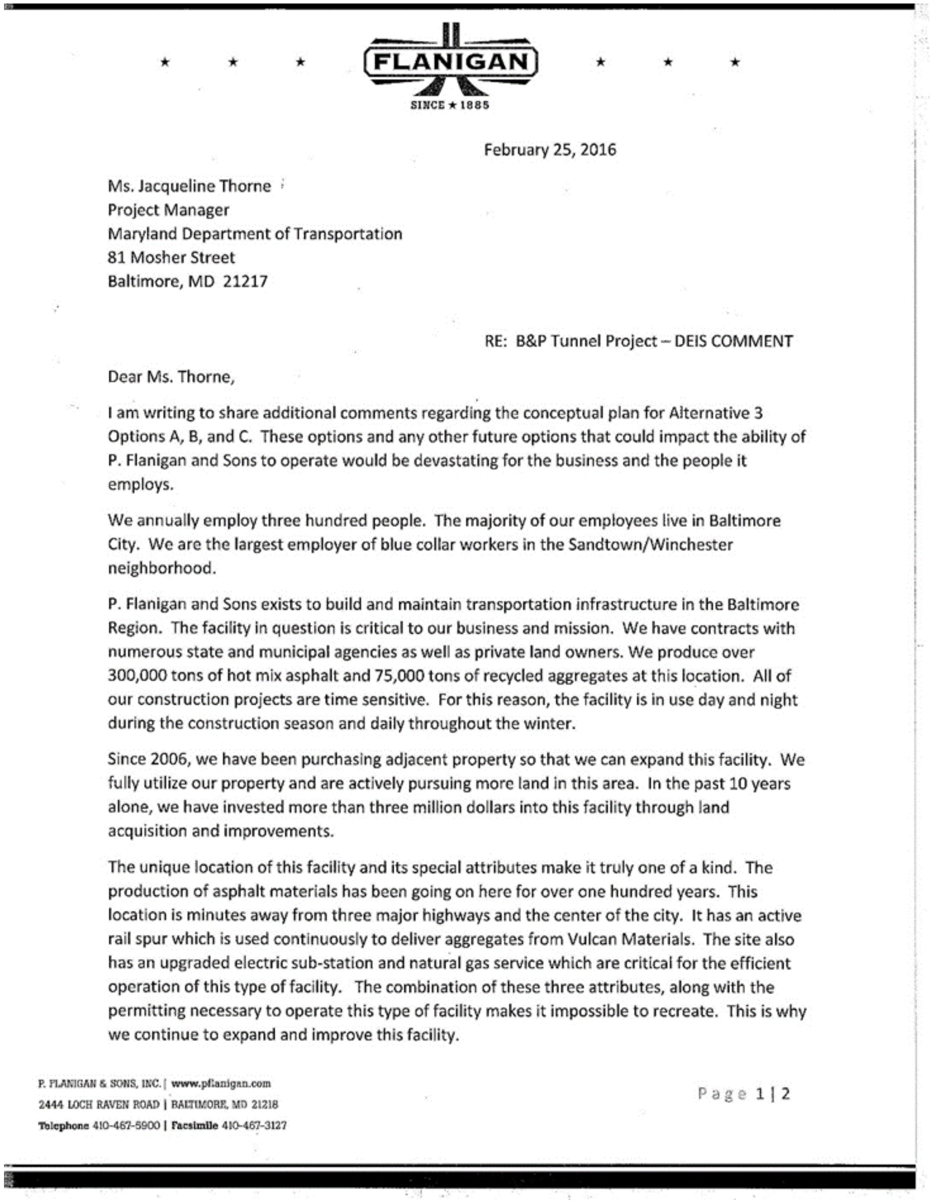
Attached, please fine our correspondence pertaining to the above subject. Thank you.

Chris Kirby for Pierce Flanigan IV
Administrative Assistant

There would be minimal impacts to P. Flanigan and Sons by the Preferred Alternative. These minimal impacts would include potential utility relocation impacts. Alternative 3B would include a south portal located southeast of the P. Flanigan and Sons Asphalt plant. Build alternatives 3A and 3C, though, would have substantial impacts. For more information, please see **Chapter III**.

COMMENTS

RESPONSES



★ ★ ★ FLANIGAN ★ ★ ★
SINCE ★ 1885

February 25, 2016

Ms. Jacqueline Thorne
Project Manager
Maryland Department of Transportation
81 Mosher Street
Baltimore, MD 21217

RE: B&P Tunnel Project – DEIS COMMENT

Dear Ms. Thorne,

I am writing to share additional comments regarding the conceptual plan for Alternative 3 Options A, B, and C. These options and any other future options that could impact the ability of P. Flanigan and Sons to operate would be devastating for the business and the people it employs.

We annually employ three hundred people. The majority of our employees live in Baltimore City. We are the largest employer of blue collar workers in the Sandtown/Winchester neighborhood.

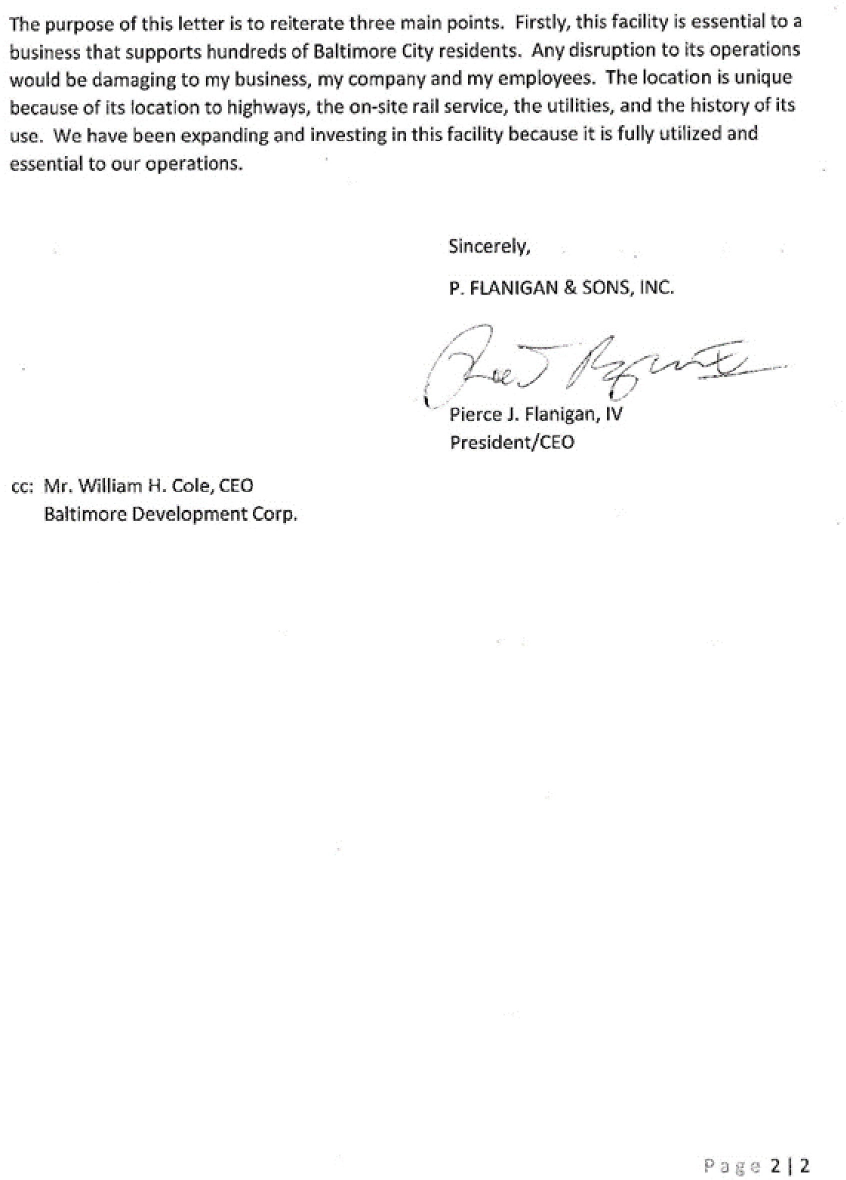
P. Flanigan and Sons exists to build and maintain transportation infrastructure in the Baltimore Region. The facility in question is critical to our business and mission. We have contracts with numerous state and municipal agencies as well as private land owners. We produce over 300,000 tons of hot mix asphalt and 75,000 tons of recycled aggregates at this location. All of our construction projects are time sensitive. For this reason, the facility is in use day and night during the construction season and daily throughout the winter.

Since 2006, we have been purchasing adjacent property so that we can expand this facility. We fully utilize our property and are actively pursuing more land in this area. In the past 10 years alone, we have invested more than three million dollars into this facility through land acquisition and improvements.

The unique location of this facility and its special attributes make it truly one of a kind. The production of asphalt materials has been going on here for over one hundred years. This location is minutes away from three major highways and the center of the city. It has an active rail spur which is used continuously to deliver aggregates from Vulcan Materials. The site also has an upgraded electric sub-station and natural gas service which are critical for the efficient operation of this type of facility. The combination of these three attributes, along with the permitting necessary to operate this type of facility makes it impossible to recreate. This is why we continue to expand and improve this facility.

COMMENTS

RESPONSES



The purpose of this letter is to reiterate three main points. Firstly, this facility is essential to a business that supports hundreds of Baltimore City residents. Any disruption to its operations would be damaging to my business, my company and my employees. The location is unique because of its location to highways, the on-site rail service, the utilities, and the history of its use. We have been expanding and investing in this facility because it is fully utilized and essential to our operations.

Sincerely,

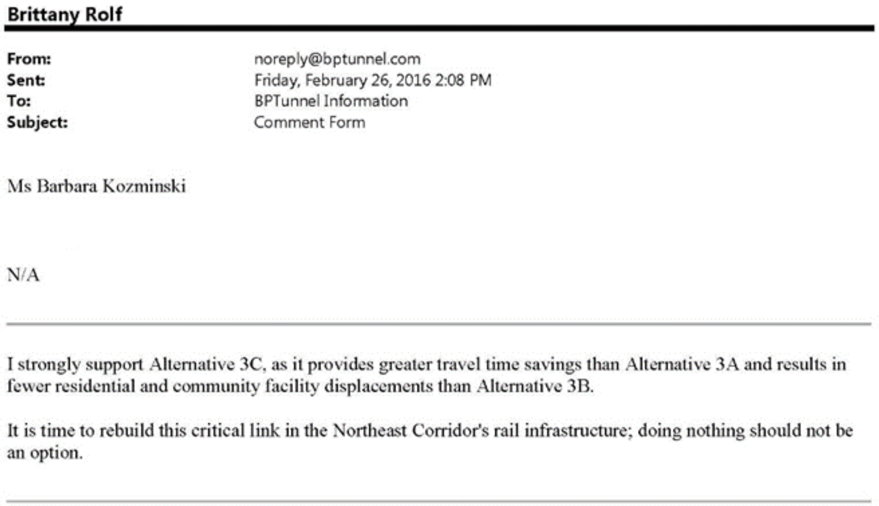
P. FLANIGAN & SONS, INC.

Pierce J. Flanigan, IV
President/CEO

cc: Mr. William H. Cole, CEO
Baltimore Development Corp.

COMMENTS

DEIS Comment 61:



Brittany Rolf

From: noreply@bptunnel.com
Sent: Friday, February 26, 2016 2:08 PM
To: BPTunnel Information
Subject: Comment Form

Ms Barbara Kozminski

N/A

1 I strongly support Alternative 3C, as it provides greater travel time savings than Alternative 3A and results in fewer residential and community facility displacements than Alternative 3B.

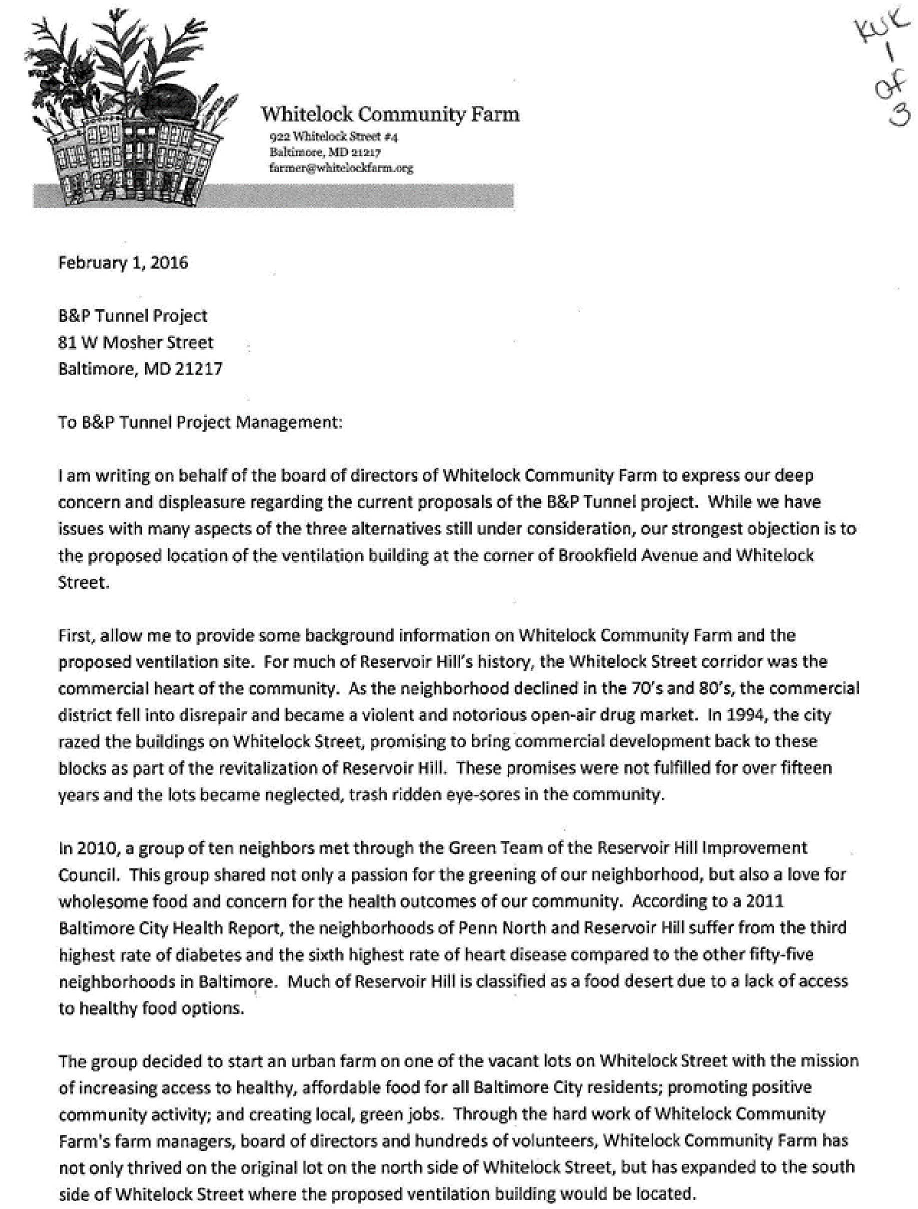
It is time to rebuild this critical link in the Northeast Corridor's rail infrastructure; doing nothing should not be an option.

RESPONSES

Response to Comment 1:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 62:



KUK 1 of 3

Whitelock Community Farm
922 Whitelock Street #4
Baltimore, MD 21217
farmer@whitelockfarm.org

February 1, 2016

B&P Tunnel Project
81 W Mosher Street
Baltimore, MD 21217

To B&P Tunnel Project Management:

1 I am writing on behalf of the board of directors of Whitelock Community Farm to express our deep concern and displeasure regarding the current proposals of the B&P Tunnel project. While we have issues with many aspects of the three alternatives still under consideration, our strongest objection is to the proposed location of the ventilation building at the corner of Brookfield Avenue and Whitelock Street.

First, allow me to provide some background information on Whitelock Community Farm and the proposed ventilation site. For much of Reservoir Hill's history, the Whitelock Street corridor was the commercial heart of the community. As the neighborhood declined in the 70's and 80's, the commercial district fell into disrepair and became a violent and notorious open-air drug market. In 1994, the city razed the buildings on Whitelock Street, promising to bring commercial development back to these blocks as part of the revitalization of Reservoir Hill. These promises were not fulfilled for over fifteen years and the lots became neglected, trash ridden eye-sores in the community.

In 2010, a group of ten neighbors met through the Green Team of the Reservoir Hill Improvement Council. This group shared not only a passion for the greening of our neighborhood, but also a love for wholesome food and concern for the health outcomes of our community. According to a 2011 Baltimore City Health Report, the neighborhoods of Penn North and Reservoir Hill suffer from the third highest rate of diabetes and the sixth highest rate of heart disease compared to the other fifty-five neighborhoods in Baltimore. Much of Reservoir Hill is classified as a food desert due to a lack of access to healthy food options.

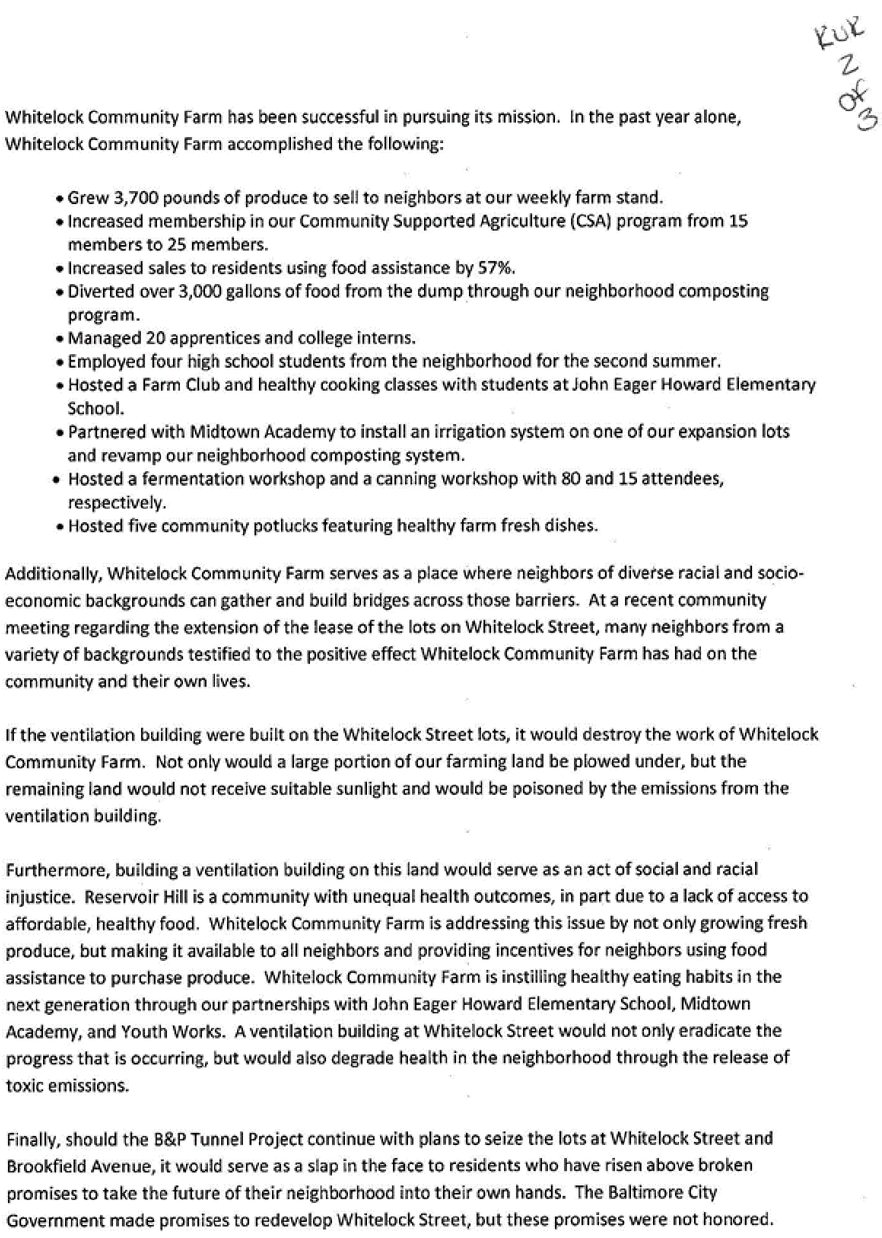
The group decided to start an urban farm on one of the vacant lots on Whitelock Street with the mission of increasing access to healthy, affordable food for all Baltimore City residents; promoting positive community activity; and creating local, green jobs. Through the hard work of Whitelock Community Farm's farm managers, board of directors and hundreds of volunteers, Whitelock Community Farm has not only thrived on the original lot on the north side of Whitelock Street, but has expanded to the south side of Whitelock Street where the proposed ventilation building would be located.

RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

RESPONSES



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of
3

Whitelock Community Farm has been successful in pursuing its mission. In the past year alone, Whitelock Community Farm accomplished the following:

- Grew 3,700 pounds of produce to sell to neighbors at our weekly farm stand.
- Increased membership in our Community Supported Agriculture (CSA) program from 15 members to 25 members.
- Increased sales to residents using food assistance by 57%.
- Diverted over 3,000 gallons of food from the dump through our neighborhood composting program.
- Managed 20 apprentices and college interns.
- Employed four high school students from the neighborhood for the second summer.
- Hosted a Farm Club and healthy cooking classes with students at John Eager Howard Elementary School.
- Partnered with Midtown Academy to install an irrigation system on one of our expansion lots and revamp our neighborhood composting system.
- Hosted a fermentation workshop and a canning workshop with 80 and 15 attendees, respectively.
- Hosted five community potlucks featuring healthy farm fresh dishes.

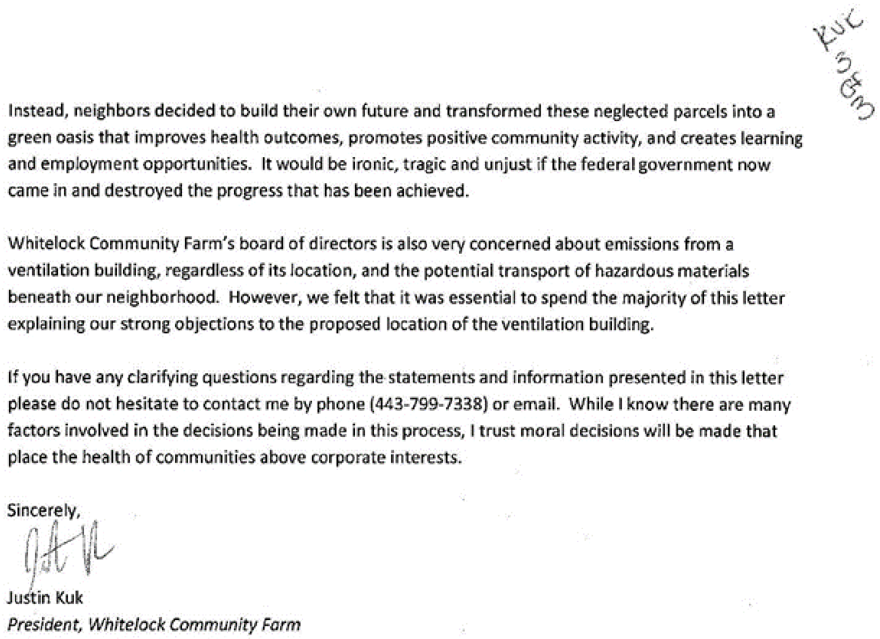
Additionally, Whitelock Community Farm serves as a place where neighbors of diverse racial and socio-economic backgrounds can gather and build bridges across those barriers. At a recent community meeting regarding the extension of the lease of the lots on Whitelock Street, many neighbors from a variety of backgrounds testified to the positive effect Whitelock Community Farm has had on the community and their own lives.

If the ventilation building were built on the Whitelock Street lots, it would destroy the work of Whitelock Community Farm. Not only would a large portion of our farming land be plowed under, but the remaining land would not receive suitable sunlight and would be poisoned by the emissions from the ventilation building.

Furthermore, building a ventilation building on this land would serve as an act of social and racial injustice. Reservoir Hill is a community with unequal health outcomes, in part due to a lack of access to affordable, healthy food. Whitelock Community Farm is addressing this issue by not only growing fresh produce, but making it available to all neighbors and providing incentives for neighbors using food assistance to purchase produce. Whitelock Community Farm is instilling healthy eating habits in the next generation through our partnerships with John Eager Howard Elementary School, Midtown Academy, and Youth Works. A ventilation building at Whitelock Street would not only eradicate the progress that is occurring, but would also degrade health in the neighborhood through the release of toxic emissions.

Finally, should the B&P Tunnel Project continue with plans to seize the lots at Whitelock Street and Brookfield Avenue, it would serve as a slap in the face to residents who have risen above broken promises to take the future of their neighborhood into their own hands. The Baltimore City Government made promises to redevelop Whitelock Street, but these promises were not honored.

COMMENTS



KUC 3 of 3

Instead, neighbors decided to build their own future and transformed these neglected parcels into a green oasis that improves health outcomes, promotes positive community activity, and creates learning and employment opportunities. It would be ironic, tragic and unjust if the federal government now came in and destroyed the progress that has been achieved.

2 Whitelock Community Farm's board of directors is also very concerned about emissions from a ventilation building, regardless of its location, and the potential transport of hazardous materials beneath our neighborhood. However, we felt that it was essential to spend the majority of this letter explaining our strong objections to the proposed location of the ventilation building.

If you have any clarifying questions regarding the statements and information presented in this letter please do not hesitate to contact me by phone (443-799-7338) or email. While I know there are many factors involved in the decisions being made in this process, I trust moral decisions will be made that place the health of communities above corporate interests.

Sincerely,

Justin Kuk
President, Whitelock Community Farm

RESPONSES

Response to Comment 2:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

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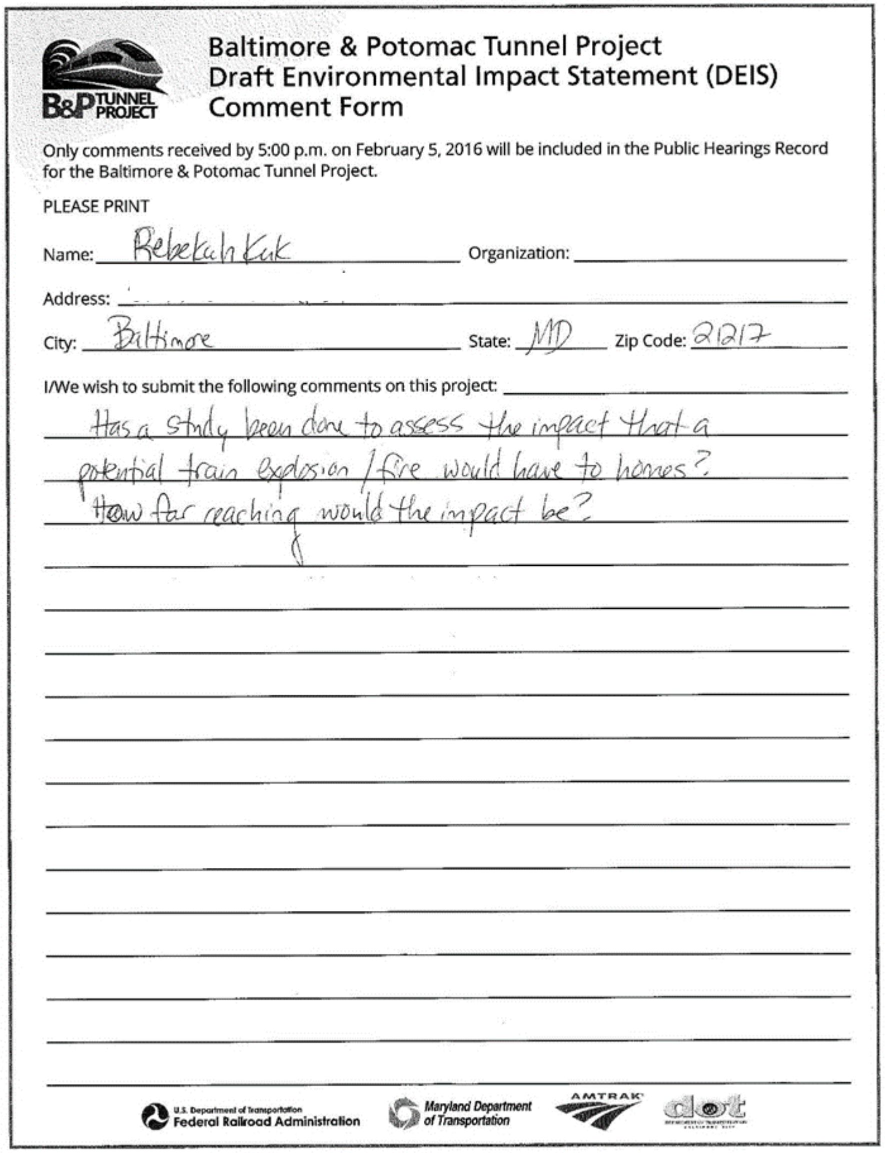
FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

COMMENTS

DEIS Comment 63:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Rebekah Kuk Organization:

Address:

City: Baltimore State: MD Zip Code: 21217

I/We wish to submit the following comments on this project:

1 Has a study been done to assess the impact that a potential train explosion / fire would have to homes? How far reaching would the impact be?

U.S. Department of Transportation Federal Railroad Administration

Maryland Department of Transportation

AMTRAK

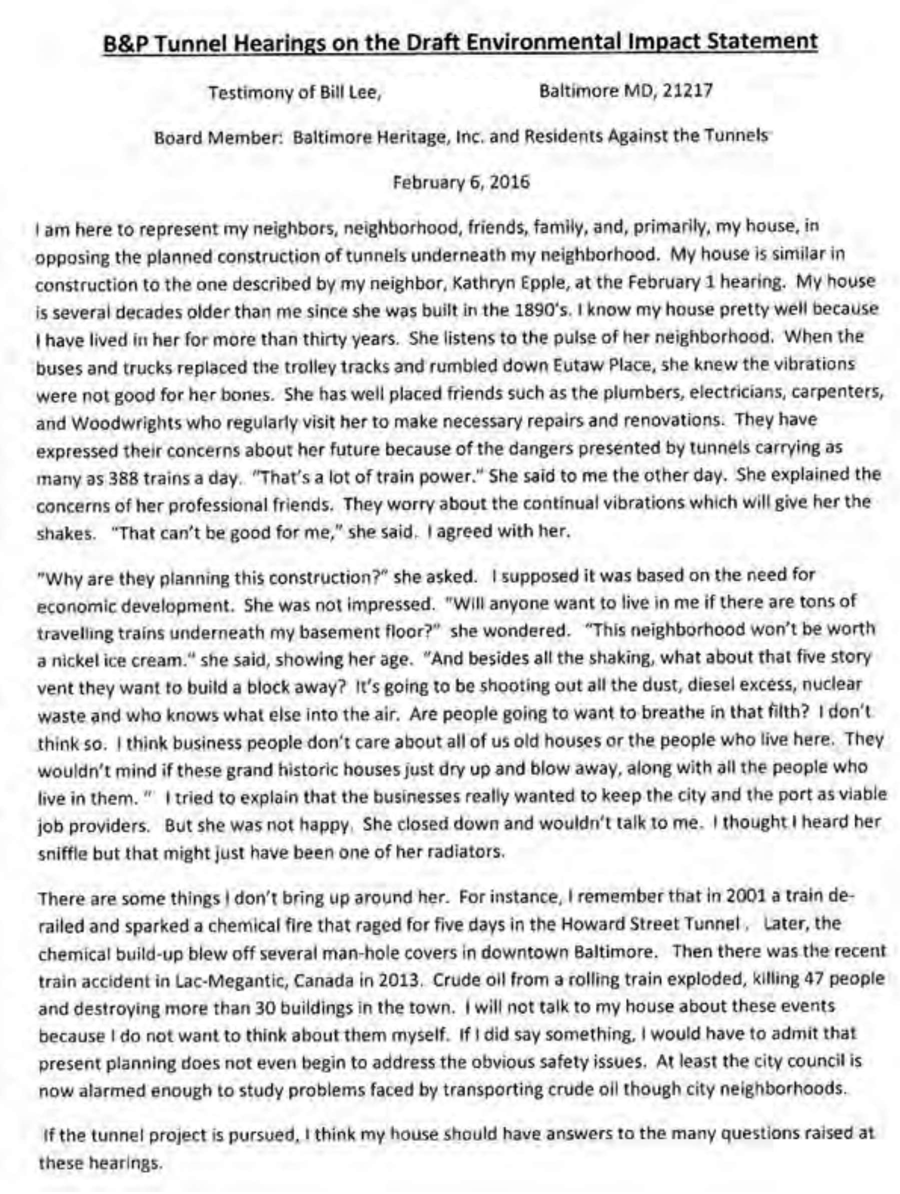
RESPONSES

Response to Comment 1:
To minimize risk to the public, FRA requires a range of measures, including emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA).

The Project has been planned mostly underground in order to avoid greater impacts to the community. In the unlikely event of an emergency, the event in a tunnel is much less damaging to a community than a similar event on an above-ground track running through the neighborhood. Additionally, as stated above, the new B&P Tunnel would be designed to be better equipped and prepared than the current B&P Tunnel.

COMMENTS

DEIS Comment 64:



B&P Tunnel Hearings on the Draft Environmental Impact Statement

Testimony of Bill Lee, Baltimore MD, 21217

Board Member: Baltimore Heritage, Inc. and Residents Against the Tunnels

February 6, 2016

I am here to represent my neighbors, neighborhood, friends, family, and, primarily, my house, in
opposing the planned construction of tunnels underneath my neighborhood. My house is similar in
construction to the one described by my neighbor, Kathryn Epple, at the February 1 hearing. My house
is several decades older than me since she was built in the 1890's. I know my house pretty well because
I have lived in her for more than thirty years. She listens to the pulse of her neighborhood. When the
buses and trucks replaced the trolley tracks and rumbled down Eutaw Place, she knew the vibrations
were not good for her bones. She has well placed friends such as the plumbers, electricians, carpenters,
and Woodwrights who regularly visit her to make necessary repairs and renovations. They have
1 expressed their concerns about her future because of the dangers presented by tunnels carrying as
many as 388 trains a day. "That's a lot of train power." She said to me the other day. She explained the
concerns of her professional friends. They worry about the continual vibrations which will give her the
shakes. "That can't be good for me," she said. I agreed with her.

2 "Why are they planning this construction?" she asked. I supposed it was based on the need for
economic development. She was not impressed. "Will anyone want to live in me if there are tons of
3 travelling trains underneath my basement floor?" she wondered. "This neighborhood won't be worth
a nickel ice cream." she said, showing her age. "And besides all the shaking, what about that five story
vent they want to build a block away? It's going to be shooting out all the dust, diesel excess, nuclear
4 waste and who knows what else into the air. Are people going to want to breathe in that filth? I don't
think so. I think business people don't care about all of us old houses or the people who live here. They
wouldn't mind if these grand historic houses just dry up and blow away, along with all the people who
5 live in them." I tried to explain that the businesses really wanted to keep the city and the port as viable
job providers. But she was not happy. She closed down and wouldn't talk to me. I thought I heard her
sniffle but that might just have been one of her radiators.

There are some things I don't bring up around her. For instance, I remember that in 2001 a train de-
railed and sparked a chemical fire that raged for five days in the Howard Street Tunnel. Later, the
chemical build-up blew off several man-hole covers in downtown Baltimore. Then there was the recent
train accident in Lac-Megantic, Canada in 2013. Crude oil from a rolling train exploded, killing 47 people
and destroying more than 30 buildings in the town. I will not talk to my house about these events
6 because I do not want to think about them myself. If I did say something, I would have to admit that
present planning does not even begin to address the obvious safety issues. At least the city council is
now alarmed enough to study problems faced by transporting crude oil though city neighborhoods.

If the tunnel project is pursued, I think my house should have answers to the many questions raised at
these hearings.

RESPONSES

Response to Comment 1:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

Response to Comment 2:
The Purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, including:

- Reducing travel time through the B&P Tunnel and along the NEC,
- Accommodating existing and projected travel demand for intercity and commuter passenger services,
- Eliminating impediments to existing and projected operations along the NEC, and
- Providing operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

In addition, the existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

Response to Comment 3:
The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Response to Comment 4:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality; emissions would fall within all acceptable federal air quality standards. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold,

COMMENTS

RESPONSES

which have been set to safeguard public health. Because the concentrations of NO_2 were modeled to be within acceptable levels, all other criteria pollutant concentrations would be within NAAQS, as NOx is the most strictly regulated air pollutant generated from diesel locomotive operation. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

Response to Comment 5:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**.

Response to Comment 6:
NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

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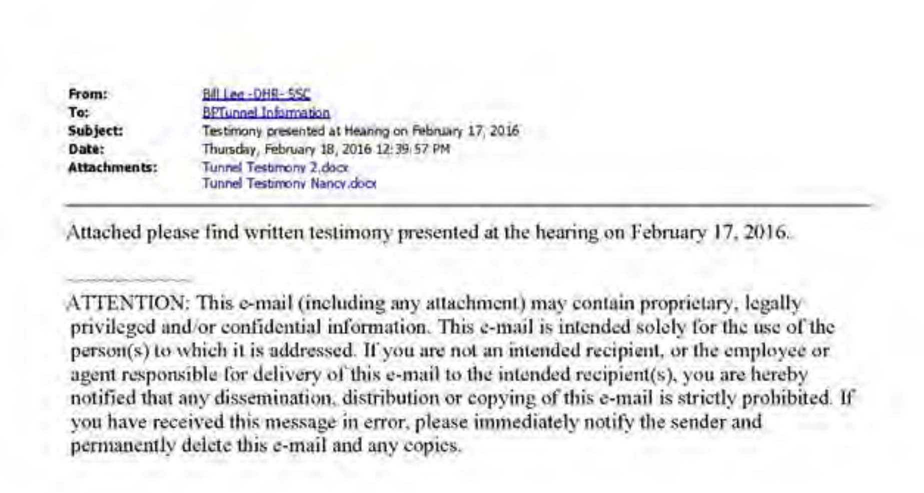
COMMENTS	RESPONSES
	FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection. The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

COMMENTS

RESPONSES

DEIS Comment 65:



From: Bill Lee -DHR- SSC
To: BPTunnel Information
Subject: Testimony presented at Hearing on February 17, 2016
Date: Thursday, February 18, 2016 12:39:57 PM
Attachments: Tunnel Testimony 2.docx
Tunnel Testimony Nancy.docx

Attached please find written testimony presented at the hearing on February 17, 2016.

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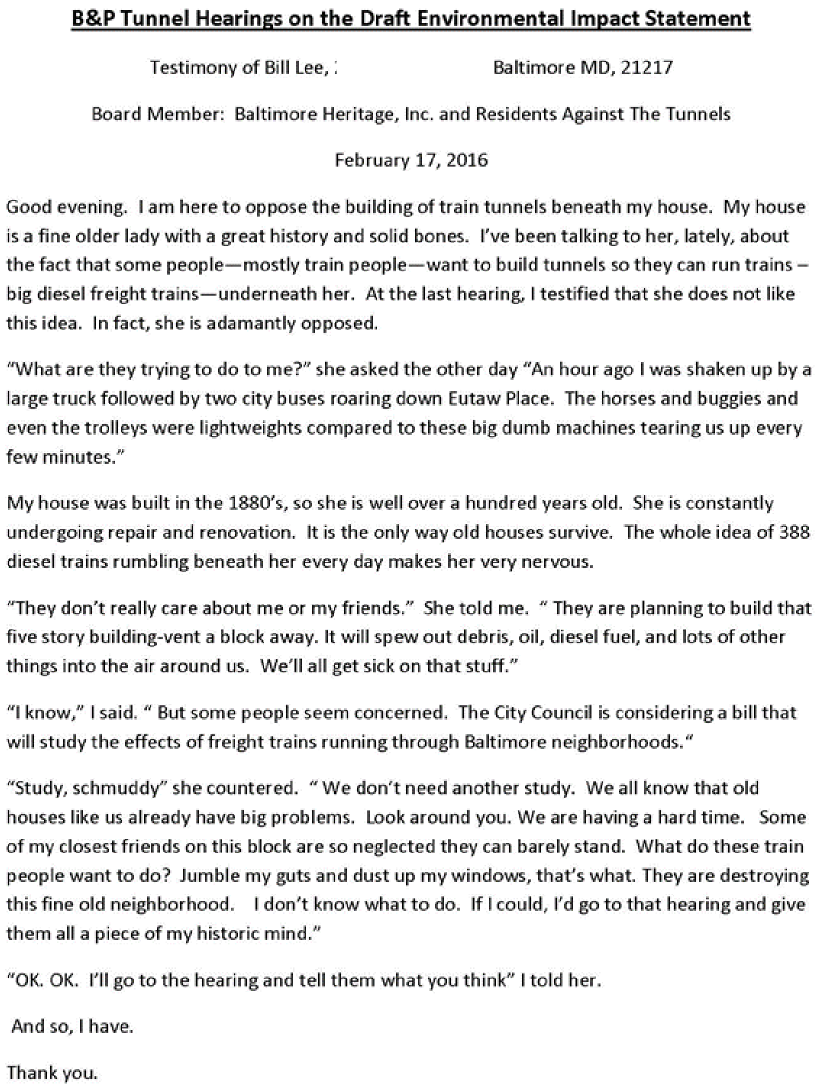
COMMENTS



B&P Tunnel Hearings on the Draft Environmental Impact Statement

Testimony of Bill Lee, : Baltimore MD, 21217

Board Member: Baltimore Heritage, Inc. and Residents Against The Tunnels

February 17, 2016

Good evening. I am here to oppose the building of train tunnels beneath my house. My house is a fine older lady with a great history and solid bones. I've been talking to her, lately, about the fact that some people—mostly train people—want to build tunnels so they can run trains – big diesel freight trains—underneath her. At the last hearing, I testified that she does not like this idea. In fact, she is adamantly opposed.

"What are they trying to do to me?" she asked the other day "An hour ago I was shaken up by a large truck followed by two city buses roaring down Eutaw Place. The horses and buggies and even the trolleys were lightweights compared to these big dumb machines tearing us up every few minutes."

1 My house was built in the 1880's, so she is well over a hundred years old. She is constantly undergoing repair and renovation. It is the only way old houses survive. The whole idea of 388 diesel trains rumbling beneath her every day makes her very nervous.

"They don't really care about me or my friends." She told me. " They are planning to build that five story building-vent a block away. It will spew out debris, oil, diesel fuel, and lots of other things into the air around us. We'll all get sick on that stuff."

"I know," I said. " But some people seem concerned. The City Council is considering a bill that will study the effects of freight trains running through Baltimore neighborhoods."

"Study, schmuddy" she countered. " We don't need another study. We all know that old houses like us already have big problems. Look around you. We are having a hard time. Some of my closest friends on this block are so neglected they can barely stand. What do these train people want to do? Jumble my guts and dust up my windows, that's what. They are destroying this fine old neighborhood. I don't know what to do. If I could, I'd go to that hearing and give them all a piece of my historic mind."

"OK. OK. I'll go to the hearing and tell them what you think" I told her.

And so, I have.

Thank you.

RESPONSES

Response to Comment 1:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be compensated for the cost of repairs.

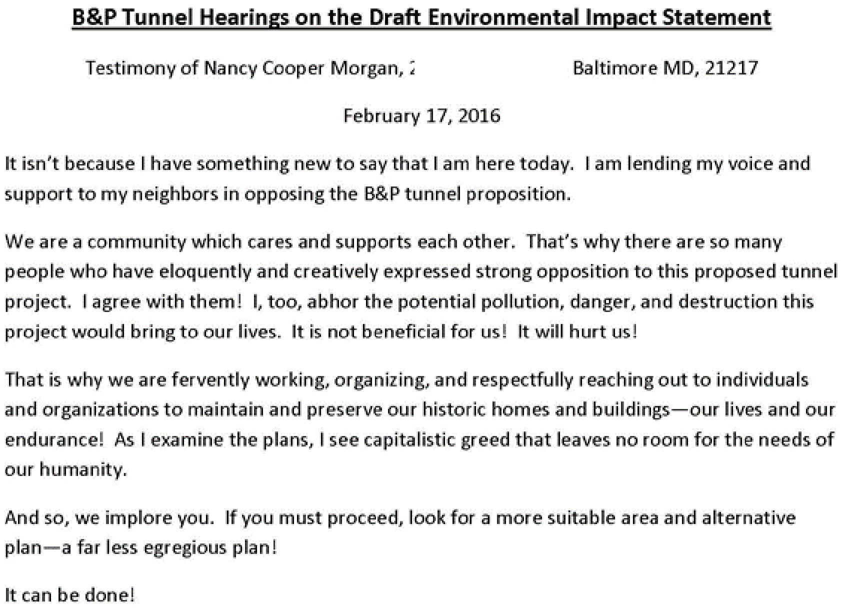
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

DEIS Comment 66:



B&P Tunnel Hearings on the Draft Environmental Impact Statement

Testimony of Nancy Cooper Morgan, 2[redacted] Baltimore MD, 21217

February 17, 2016

It isn't because I have something new to say that I am here today. I am lending my voice and support to my neighbors in opposing the B&P tunnel proposition.

We are a community which cares and supports each other. That's why there are so many
people who have eloquently and creatively expressed strong opposition to this proposed tunnel
1 project. I agree with them! I, too, abhor the potential pollution, danger, and destruction this
project would bring to our lives. It is not beneficial for us! It will hurt us!

2 That is why we are fervently working, organizing, and respectfully reaching out to individuals and organizations to maintain and preserve our historic homes and buildings—our lives and our endurance! As I examine the plans, I see capitalistic greed that leaves no room for the needs of our humanity.

3 And so, we implore you. If you must proceed, look for a more suitable area and alternative plan—a far less egregious plan!

It can be done!

RESPONSES

Response to Comment 1:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

Response to Comment 2:
The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**.

The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

Response to Comment 3:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The 14 new location alternatives included five alternatives based on previous studies

COMMENTS

RESPONSES

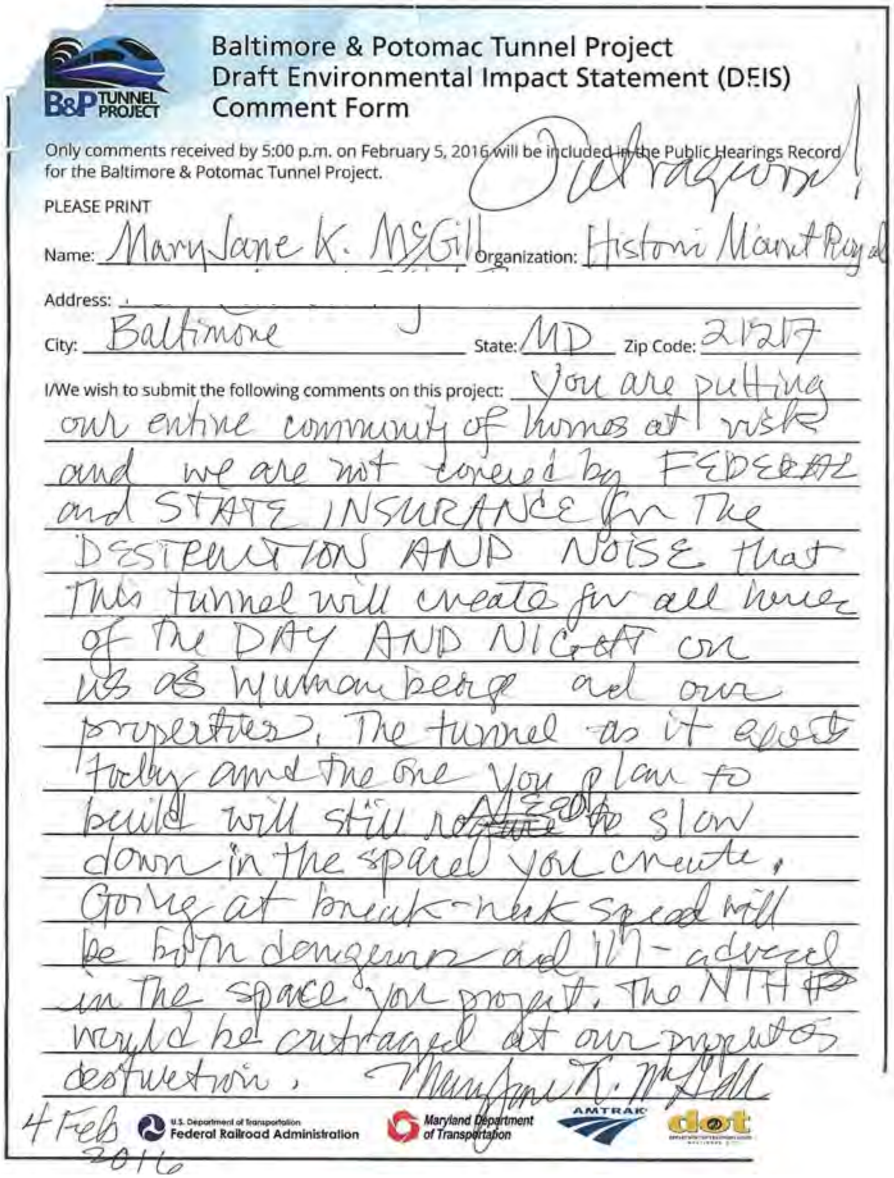
(Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 67:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

Outrageous!

PLEASE PRINT

Name: MaryJane K. McGill Organization: Historic Mount Royal

Address: [redacted]

City: Baltimore State: MD Zip Code: 21217

I/We wish to submit the following comments on this project: You are putting
1 our entire community of homes at risk
and we are not covered by FEDERAL
and STATE INSURANCE for The
DESTRUCTION AND NOISE that
2 This tunnel will create for all hours
of The DAY AND NIGHT on
us as human beings and our
properties. The tunnel as it exists
today and the one you plan to
3 build will still NEED to slow
down in the spaces you create.
Going at break-neck speed will
be both dangerous and ill-advised
in The space you project. The NTHP
would be outraged at our property's
destruction. MaryJane K. McGill
4 Feb 2016

U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK
dot

RESPONSES

Response to Comment 1:

Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

Response to Comment 2:

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

COMMENTS

RESPONSES

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

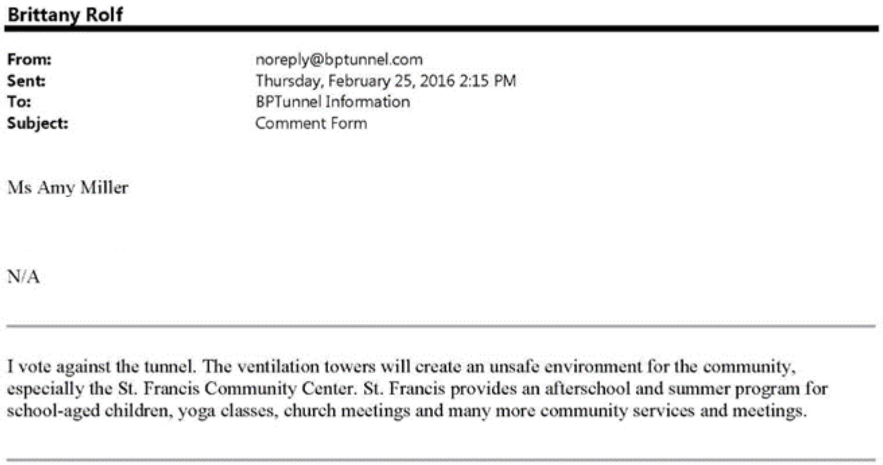
All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

The Project Team has performed an impact analysis for noise following the Federal Transit Administration’s guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

Response to Comment 3:
New tunnels would be designed to optimize safety and modern standards. Amtrak and Norfolk Southern (NS) are anticipated to use existing fleets and newly acquired equipment in the B&P Tunnel. This equipment must meet federal standards for safe operations. In addition, the tunnel would be equipped with Automatic Train Control (ATC) and Positive Train Control (PTC) systems, which use computer systems to control the speed of both passenger and freight trains within the tunnel.

COMMENTS

DEIS Comment 68:



Brittany Rolf

From:	noreply@bptunnel.com
Sent:	Thursday, February 25, 2016 2:15 PM
To:	BPTunnel Information
Subject:	Comment Form

Ms Amy Miller

N/A

1 I vote against the tunnel. The ventilation towers will create an unsafe environment for the community, especially the St. Francis Community Center. St. Francis provides an afterschool and summer program for school-aged children, yoga classes, church meetings and many more community services and meetings.

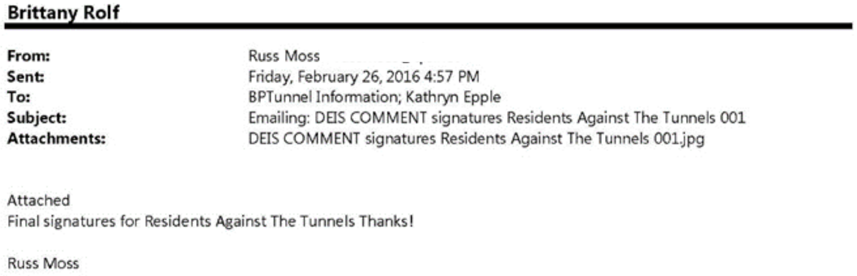
RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

COMMENTS

DEIS Comment 69:



Brittany Rolf

From: Russ Moss
Sent: Friday, February 26, 2016 4:57 PM
To: BPTunnel Information; Kathryn Epple
Subject: Emailing: DEIS COMMENT signatures Residents Against The Tunnels 001
Attachments: DEIS COMMENT signatures Residents Against The Tunnels 001.jpg

Attached
Final signatures for Residents Against The Tunnels Thanks!

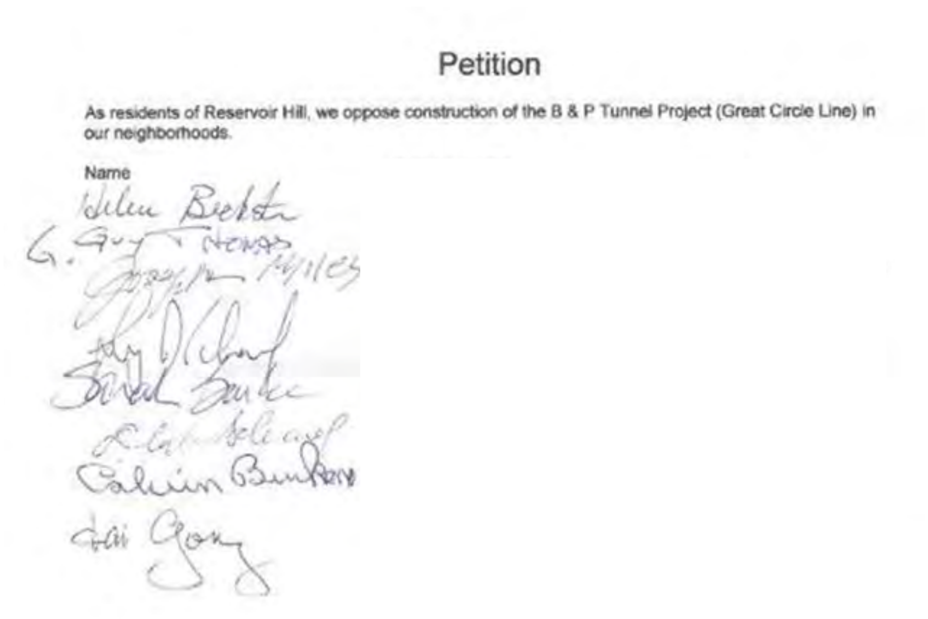
Russ Moss

RESPONSES

Thank you for your comment. We have reviewed the signatories attached.

COMMENTS

RESPONSES



Petition

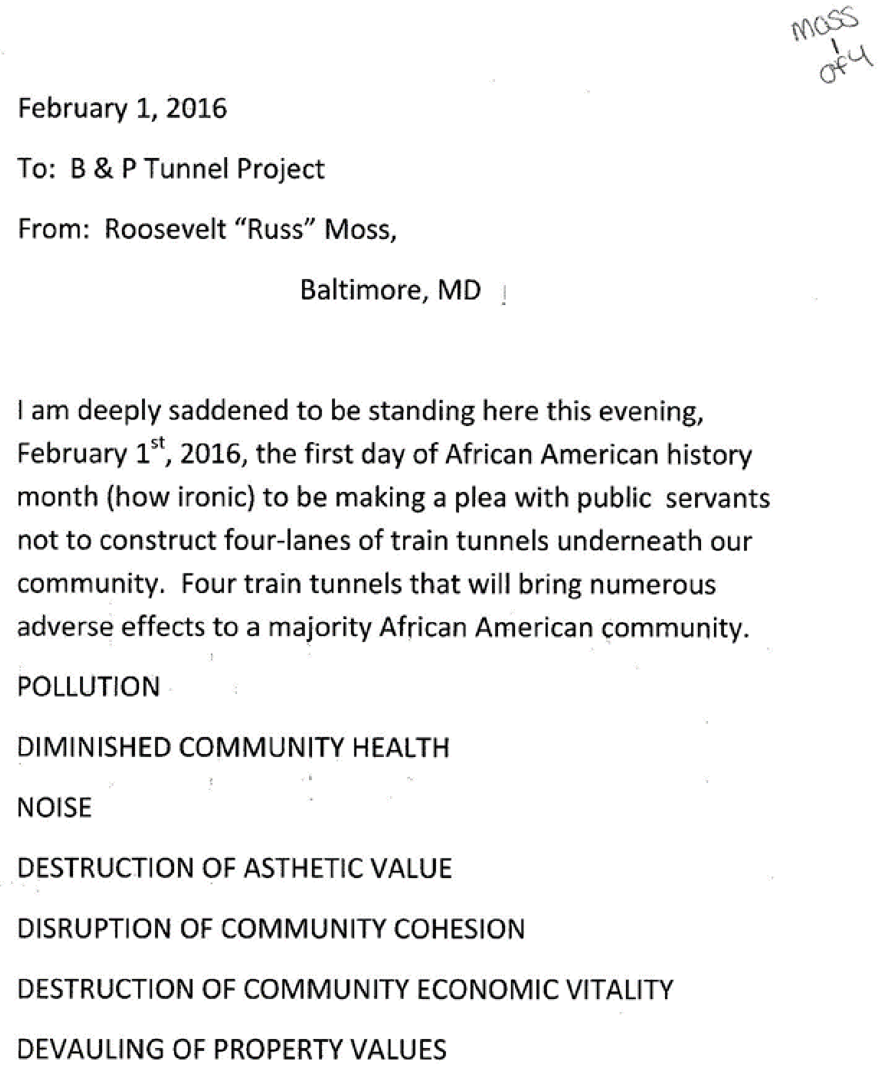
As residents of Reservoir Hill, we oppose construction of the B & P Tunnel Project (Great Circle Line) in our neighborhoods.

Name

Helen Brebster
G. Guy Thomas
Joseph Miles
Sarah Burke
Calvin Bunkers
Gai Gong

COMMENTS | **RESPONSES**

DEIS Comment 70:



Moss
1
of 4

February 1, 2016

To: B & P Tunnel Project

From: Roosevelt "Russ" Moss,

Baltimore, MD

I am deeply saddened to be standing here this evening, February 1st, 2016, the first day of African American history month (how ironic) to be making a plea with public servants not to construct four-lanes of train tunnels underneath our community. Four train tunnels that will bring numerous adverse effects to a majority African American community.

POLLUTION

DIMINISHED COMMUNITY HEALTH

NOISE

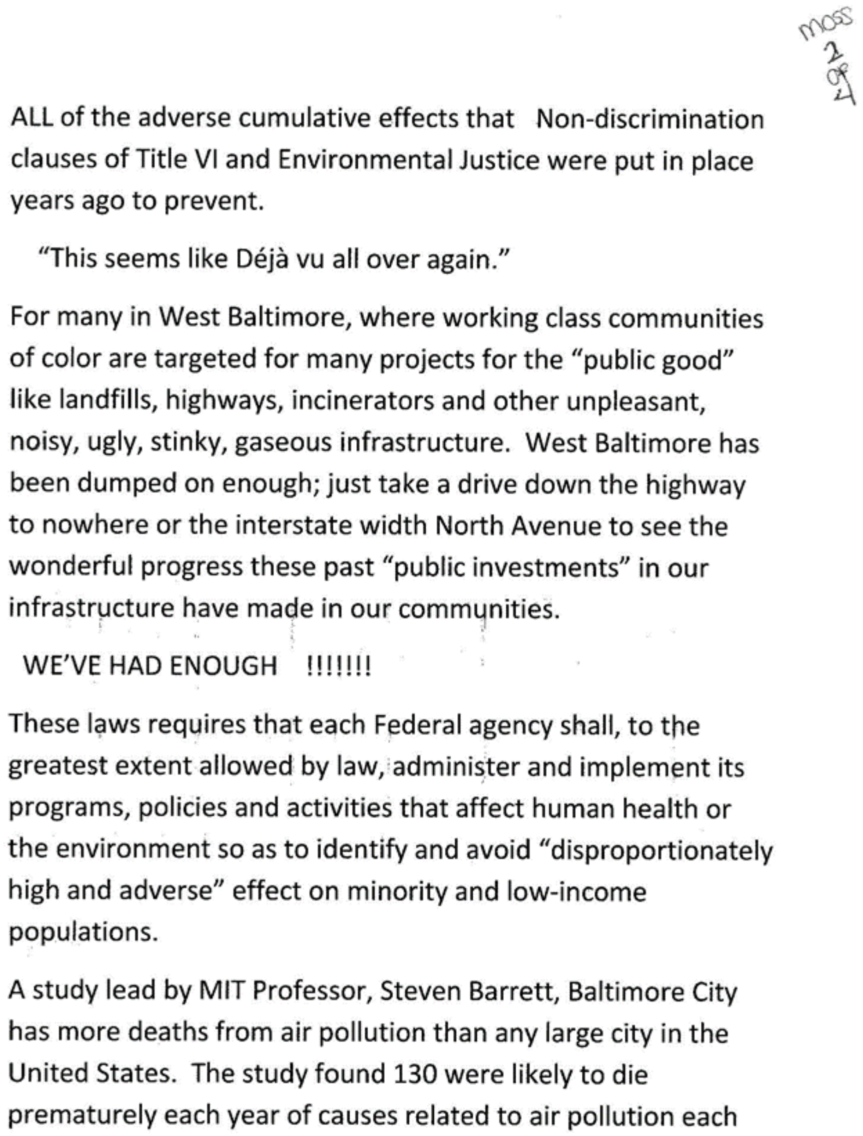
DESTRUCTION OF ASTHETIC VALUE

DISRUPTION OF COMMUNITY COHESION

DESTRUCTION OF COMMUNITY ECONOMIC VITALITY

DEVAULING OF PROPERTY VALUES

COMMENTS



moss 2 of 4

ALL of the adverse cumulative effects that Non-discrimination clauses of Title VI and Environmental Justice were put in place years ago to prevent.

"This seems like Déjà vu all over again."

1 For many in West Baltimore, where working class communities of color are targeted for many projects for the "public good" like landfills, highways, incinerators and other unpleasant, noisy, ugly, stinky, gaseous infrastructure. West Baltimore has been dumped on enough; just take a drive down the highway to nowhere or the interstate width North Avenue to see the wonderful progress these past "public investments" in our infrastructure have made in our communities.

WE'VE HAD ENOUGH !!!!!!!

These laws requires that each Federal agency shall, to the greatest extent allowed by law, administer and implement its programs, policies and activities that affect human health or the environment so as to identify and avoid "disproportionately high and adverse" effect on minority and low-income populations.

A study lead by MIT Professor, Steven Barrett, Baltimore City has more deaths from air pollution than any large city in the United States. The study found 130 were likely to die prematurely each year of causes related to air pollution each

RESPONSES

Response to Comment 1:
Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of Transportation's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

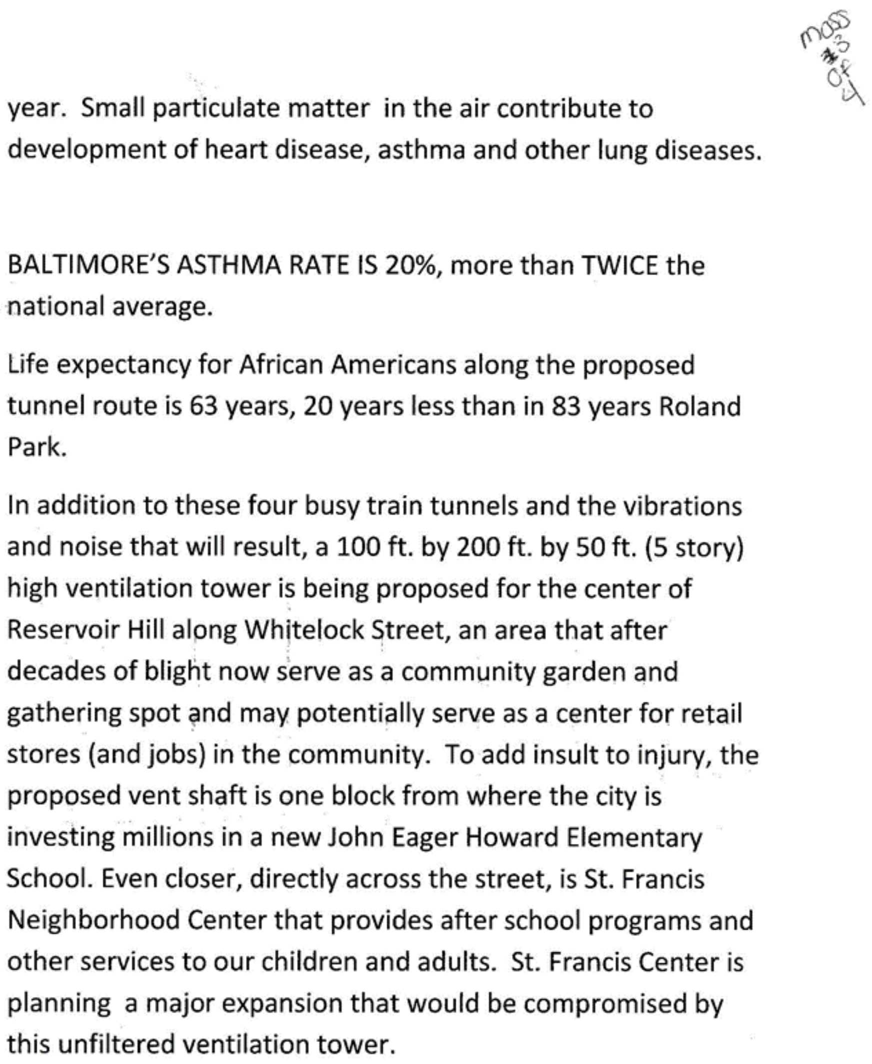
The B&P Project Team has performed an Environmental Justice (EJ) analysis consistent with EO 12898 and subsequent USDOT Orders. A critical component of the EO on environmental justice is public outreach. The Project Team has engaged extensively with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held with local officials; public, local, and regional organizations; government agencies; and representatives of affected EJ communities along the evaluated alternative alignment. Three Public Open Houses, as well as ten community meetings, have been held where the public was given the opportunity to learn about the project development in-person, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings. Additionally, the Project Team attended meetings at the request of the following organizations: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter's Clavier Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School.

Direct mailings to residents in the Study Area included property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The Project website continues to post meeting notices, Project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship, and other organizations.

The Project Team studied community composition in the areas affected by the build alternatives. It reviewed data from the American Community Survey 2009-2013 for minority and low-income populations, the National Center for Educational Statistics, government-assisted housing programs, historical references, city officials, field visits, and community meetings. From this information, the Project Team learned that of the 77 Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS.

Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations.

COMMENTS



mass #3 of 4

year. Small particulate matter in the air contribute to development of heart disease, asthma and other lung diseases.

2 BALTIMORE'S ASTHMA RATE IS 20%, more than TWICE the national average.

Life expectancy for African Americans along the proposed tunnel route is 63 years, 20 years less than in 83 years Roland Park.

In addition to these four busy train tunnels and the vibrations
3 and noise that will result, a 100 ft. by 200 ft. by 50 ft. (5 story)
high ventilation tower is being proposed for the center of
Reservoir Hill along Whitelock Street, an area that after
decades of blight now serve as a community garden and
4 gathering spot and may potentially serve as a center for retail
stores (and jobs) in the community. To add insult to injury, the
proposed vent shaft is one block from where the city is
investing millions in a new John Eager Howard Elementary
School. Even closer, directly across the street, is St. Francis
Neighborhood Center that provides after school programs and
other services to our children and adults. St. Francis Center is
planning a major expansion that would be compromised by
this unfiltered ventilation tower.

RESPONSES

For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings.

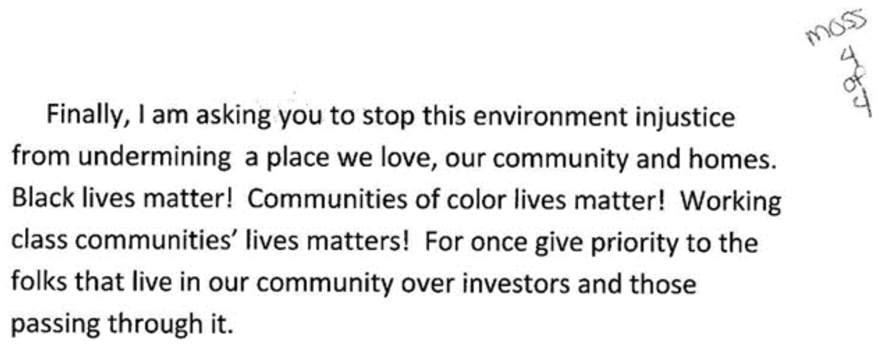
As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be underground which would reduce the overall impact to the communities. The Project sponsor will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project sponsor will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

Response to Comment 2:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

Response to Comment 3:
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA's *Transit Noise and Vibration Impact Assessment*, and construction vibration levels were also evaluated using both FTA guidelines and standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train

COMMENTS



moss 4 of 4

1 Finally, I am asking you to stop this environment injustice from undermining a place we love, our community and homes. Black lives matter! Communities of color lives matter! Working class communities' lives matters! For once give priority to the folks that live in our community over investors and those passing through it.

RESPONSES

passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI**.

The three ventilation plant facilities would be subject to the operational noise level standards included in the Noise Regulation of the Health Code of Baltimore City § 9-206 Noise Regulation, 2015. This regulation provides the noise limits for manufacturing, commercial, and residential zones in Baltimore City– depending on the source of noise and the types of adjacent land uses. For noise generated within residential zones, there is a limit of 55 dBA at any point on the property line of the use.

Noise levels in the immediate vicinity of the ventilation plant buildings would be caused by the continual operation of the ventilation fans within each facility. The horizontal fans would operate periodically and would generate sound that would propagate through the louvers at the top of the ventilation facilities. Fans would operate periodically when NO_2 levels in the tunnel exceed a set threshold or in emergencies when smoke is present in the tunnel. NO_2 levels are likely to be highest when the level of diesel locomotive operations is

COMMENTS	RESPONSES

highest, or when congestion causes trains to operate slowly or to idle in the tunnel. However, there is not enough information currently available to determine how many hours per day, on average, the fans would run and whether or not they would run during the night.

The design standard for the ventilation facilities would limit the outdoor noise level, when the fans are in operation, to L_{max} 50 dBA at the facility property lines. 50 dBA is approximately the noise produced by an indoor air conditioner at a distance of three feet.

To achieve the required reduction in noise level, cylindrical or rectangular sound attenuators would be mounted directly to each fan or to the ductwork within the system. In addition, the building itself would partially shield noise from the interior of the ventilation plant, which would further reduce noise levels outside of the building. The Preliminary Engineering Team has stated that the ventilation plant facilities, with attenuators installed, will emit noise at 45 dBA. This would meet the design standard of L_{max} 50 dBA at the facility property lines (i.e., the noise level generated would be less than the design standard).

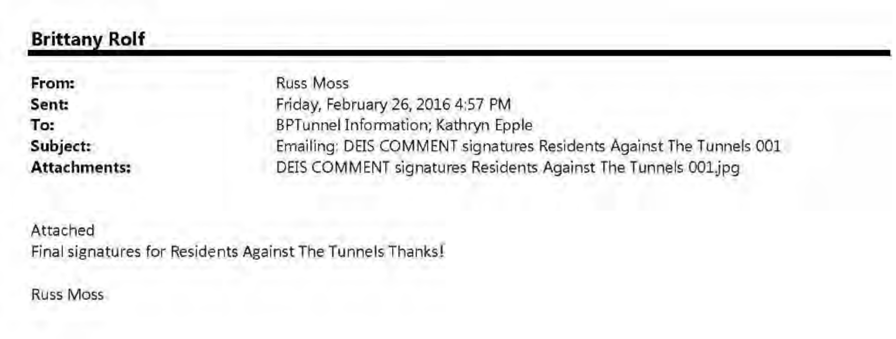
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise, and vibration impacts, as described in **Chapter VI**. These efforts are ongoing and are documented in this FEIS.

Response to Comment 4:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

RESPONSES

DEIS Comment 71:



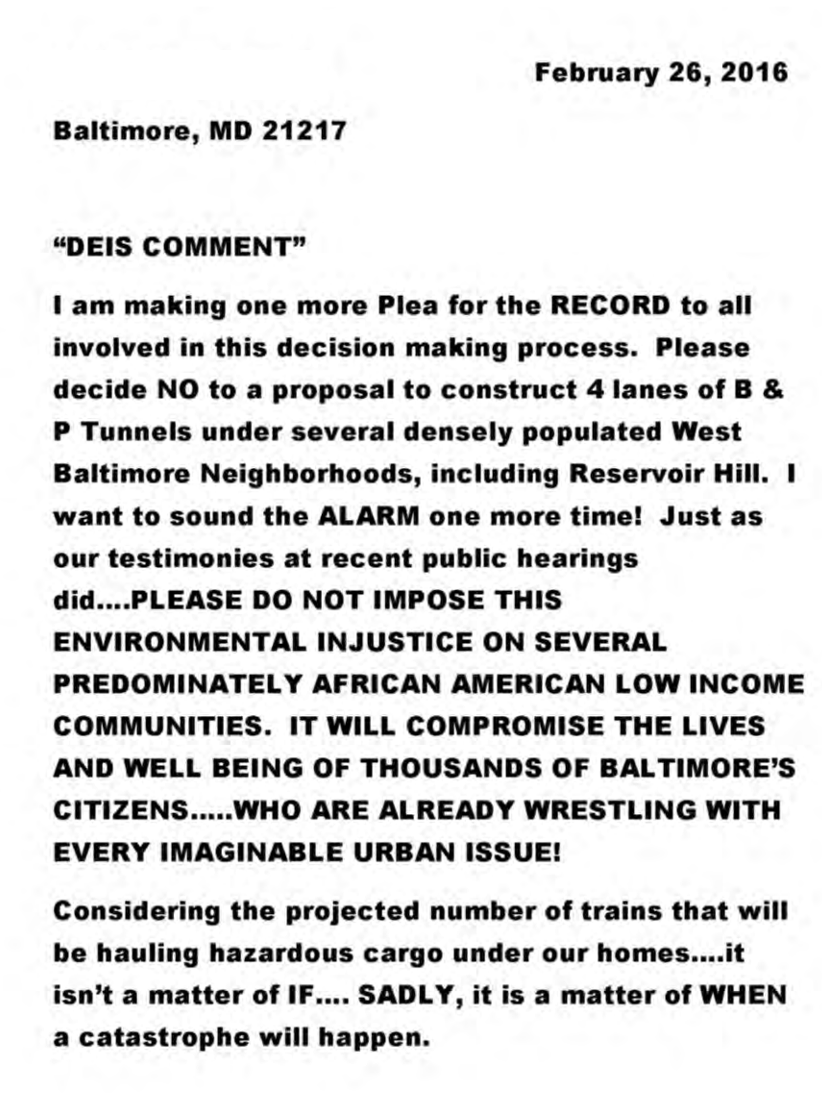
Brittany Rolf

From: Russ Moss
Sent: Friday, February 26, 2016 4:57 PM
To: BPTunnel Information; Kathryn Epple
Subject: Emailing: DEIS COMMENT signatures Residents Against The Tunnels 001
Attachments: DEIS COMMENT signatures Residents Against The Tunnels 001.jpg

Attached
Final signatures for Residents Against The Tunnels Thanks!

Russ Moss

COMMENTS



February 26, 2016

Baltimore, MD 21217

"DEIS COMMENT"

1 **I am making one more Plea for the RECORD to all involved in this decision making process. Please decide NO to a proposal to construct 4 lanes of B & P Tunnels under several densely populated West Baltimore Neighborhoods, including Reservoir Hill. I want to sound the ALARM one more time! Just as our testimonies at recent public hearings did....PLEASE DO NOT IMPOSE THIS ENVIRONMENTAL INJUSTICE ON SEVERAL PREDOMINATELY AFRICAN AMERICAN LOW INCOME COMMUNITIES. IT WILL COMPROMISE THE LIVES AND WELL BEING OF THOUSANDS OF BALTIMORE'S CITIZENS.....WHO ARE ALREADY WRESTLING WITH EVERY IMAGINABLE URBAN ISSUE!**

2 **Considering the projected number of trains that will be hauling hazardous cargo under our homes....it isn't a matter of IF.... SADLY, it is a matter of WHEN a catastrophe will happen.**

RESPONSES

Response to Comment 1:
Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of **Transportation's** environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

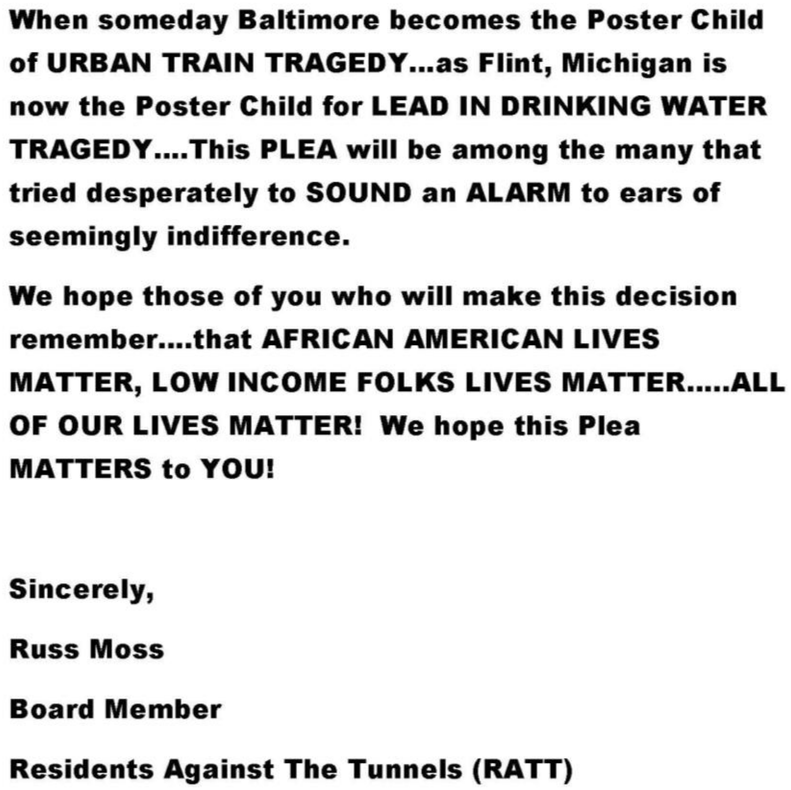
The B&P Project Team has performed an Environmental Justice (EJ) analysis consistent with EO 12898 and subsequent USDOT Orders. A critical component of the EO on environmental justice is public outreach. The Project Team has engaged extensively with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held **with** local officials; public, local, and regional organizations; government agencies; and representatives of affected EJ communities along the evaluated alternative alignment. Three Public Open Houses, as well as ten community meetings, have been held where the public was given the opportunity to learn about the project development in-person, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings. Additionally, the Project Team attended meetings at the request of the following organizations: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter's Clavier Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School.

Direct mailings to residents in the Study Area included property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The Project website continues to post meeting notices, Project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship, and other organizations.

The Project Team studied community composition in the areas affected by the build alternatives. It reviewed data from the American Community Survey 2009-2013 for minority and low-income populations, the National Center for Educational Statistics, government-assisted housing programs, historical references, city officials, field visits, and community meetings. From this information, the Project Team learned that of the 77 Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS.

Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations.

COMMENTS



When someday Baltimore becomes the Poster Child of URBAN TRAIN TRAGEDY...as Flint, Michigan is now the Poster Child for LEAD IN DRINKING WATER TRAGEDY....This PLEA will be among the many that tried desperately to SOUND an ALARM to ears of seemingly indifference.

We hope those of you who will make this decision remember....that AFRICAN AMERICAN LIVES MATTER, LOW INCOME FOLKS LIVES MATTER.....ALL OF OUR LIVES MATTER! We hope this Plea MATTERS to YOU!

Sincerely,

Russ Moss

Board Member

Residents Against The Tunnels (RATT)

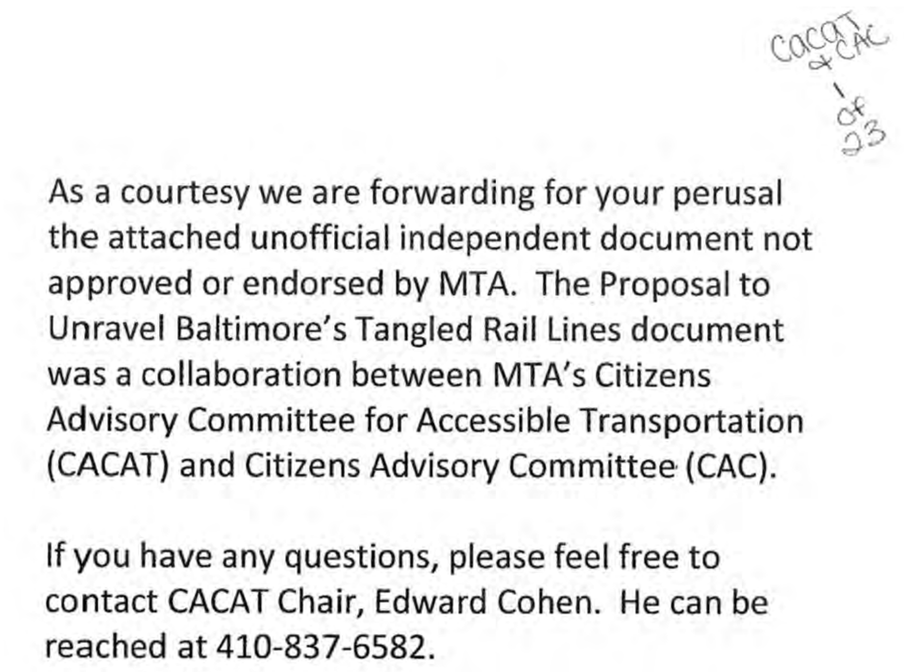
RESPONSES

For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings.

As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be underground which would reduce the overall impact to the communities. The Project sponsor will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project sponsor will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

Response to Comment 2:
Per **Chapter V** of the FEIS, it is projected that in 2040, 388 trains are expected to use the tunnel—386 passenger trains with no hazmat cargo, and two freight trains with limited hazmat cargo (based on current freight volumes projected into the future). Notwithstanding this likely very low volume of hazardous materials in the tunnel, the new tunnels would be designed to optimize safety and modern standards. Amtrak and Norfolk Southern (NS) are anticipated to use existing fleets and newly acquired equipment in the tunnel. This equipment must meet federal standards for safe operations. In addition, the tunnel will be equipped with Automatic Train Control (ATC) and Positive Train Control (PTC) systems, which use computer systems to control the speed of both passenger and freight trains within the tunnel. The Project sponsor will develop and implement a Hazardous Spill Prevention Plan and a Hazardous Materials Remediation Plan, as well as an Emergency Management Plan, to be implemented in the event of a tunnel emergency. Tunnel drainage concepts are being developed to meet MDE and BD standards for discharge into sanitary or stormwater utility systems. In addition, concepts are being designed to provide protection from diesel fuel and other hydrocarbon leaks into the tunnel drainage system.

COMMENTS



CACAT & CAC
1 of 23

3 As a courtesy we are forwarding for your perusal the attached unofficial independent document not approved or endorsed by MTA. The Proposal to Unravel Baltimore's Tangled Rail Lines document was a collaboration between MTA's Citizens Advisory Committee for Accessible Transportation (CACAT) and Citizens Advisory Committee (CAC).

If you have any questions, please feel free to contact CACAT Chair, Edward Cohen. He can be reached at 410-837-6582.

Response to Comment # 3:

Report 20 Oct 2015	Report 10 Sept 2015
"Project requires only one new underground station and about 1.15 miles of new tunnel. It costs less than half of what the Red Line would cost. The east side portal would be north of Madison and Curley Streets and any current structures." "Item 2, a two track freight tunnel…"	"This project requires about 1.15 miles of new tunnel and cost less than half of what the Red Line would cost." "Item 2, the freight tunnel…"
List of Maps added. (page 14)	
New maps (page 21).	

The report entitled, *A Proposal to Unravel Baltimore's Tangled Rail Lines,* from October 2015 provides the updates mentioned above; however, aside from these changes, it is not substantively different from the original report of the same name, dated September 2015. To review the September 2015 report in its entirety, please refer to **DEIS Comment #11**.

RESPONSES

Finally, as Amtrak is responsible for operating a robust passenger rail service, the two inner tracks of the four-track tunnel system will be reserved (in all but emergency conditions) for high-speed passenger train operations, freight services will be restricted to share the two slower, outer tracks with MARC commuter rail trains. It is therefore not possible for the tunnel system to accommodate significantly increased freight operations.

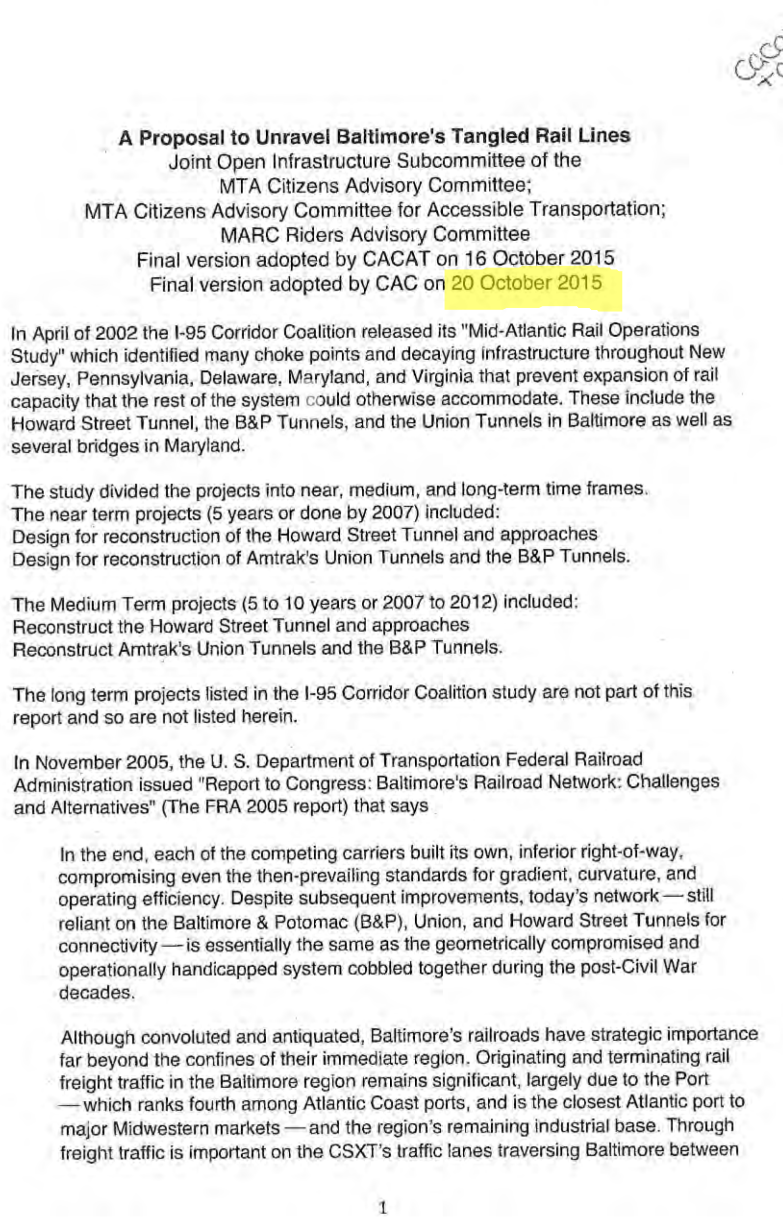
Response to Comment 3

The report provided, *A Proposal to Unravel Baltimore's Tangled Rail Lines*, argues for a comprehensive system approach to rail planning in Baltimore and the mid-Atlantic region. It describes a list of projects and the order in which they should be completed. The report takes into consideration local, state, and regional transportation routes, and recommends new construction at a number of locations in order to relieve congestion and create opportunities for expanding rail service in the future.

While recommendations in the report focus on resolving issues at a regional level, they would not address or resolve the specific needs of the B&P Tunnel; therefore, the improvements suggested in the report would be beyond the purview of the Project. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life. It is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. For additional information regarding The Purpose and Need for the Project, please see **Chapter II** of this FEIS.

COMMENTS

RESPONSES



CacaT + CAC N&3

A Proposal to Unravel Baltimore's Tangled Rail Lines
Joint Open Infrastructure Subcommittee of the
MTA Citizens Advisory Committee;
MTA Citizens Advisory Committee for Accessible Transportation;
MARC Riders Advisory Committee
Final version adopted by CACAT on 16 October 2015
Final version adopted by CAC on 20 October 2015

In April of 2002 the I-95 Corridor Coalition released its "Mid-Atlantic Rail Operations Study" which identified many choke points and decaying infrastructure throughout New Jersey, Pennsylvania, Delaware, Maryland, and Virginia that prevent expansion of rail capacity that the rest of the system could otherwise accommodate. These include the Howard Street Tunnel, the B&P Tunnels, and the Union Tunnels in Baltimore as well as several bridges in Maryland.

The study divided the projects into near, medium, and long-term time frames.
The near term projects (5 years or done by 2007) included:
Design for reconstruction of the Howard Street Tunnel and approaches
Design for reconstruction of Amtrak's Union Tunnels and the B&P Tunnels.

The Medium Term projects (5 to 10 years or 2007 to 2012) included:
Reconstruct the Howard Street Tunnel and approaches
Reconstruct Amtrak's Union Tunnels and the B&P Tunnels.

The long term projects listed in the I-95 Corridor Coalition study are not part of this report and so are not listed herein.

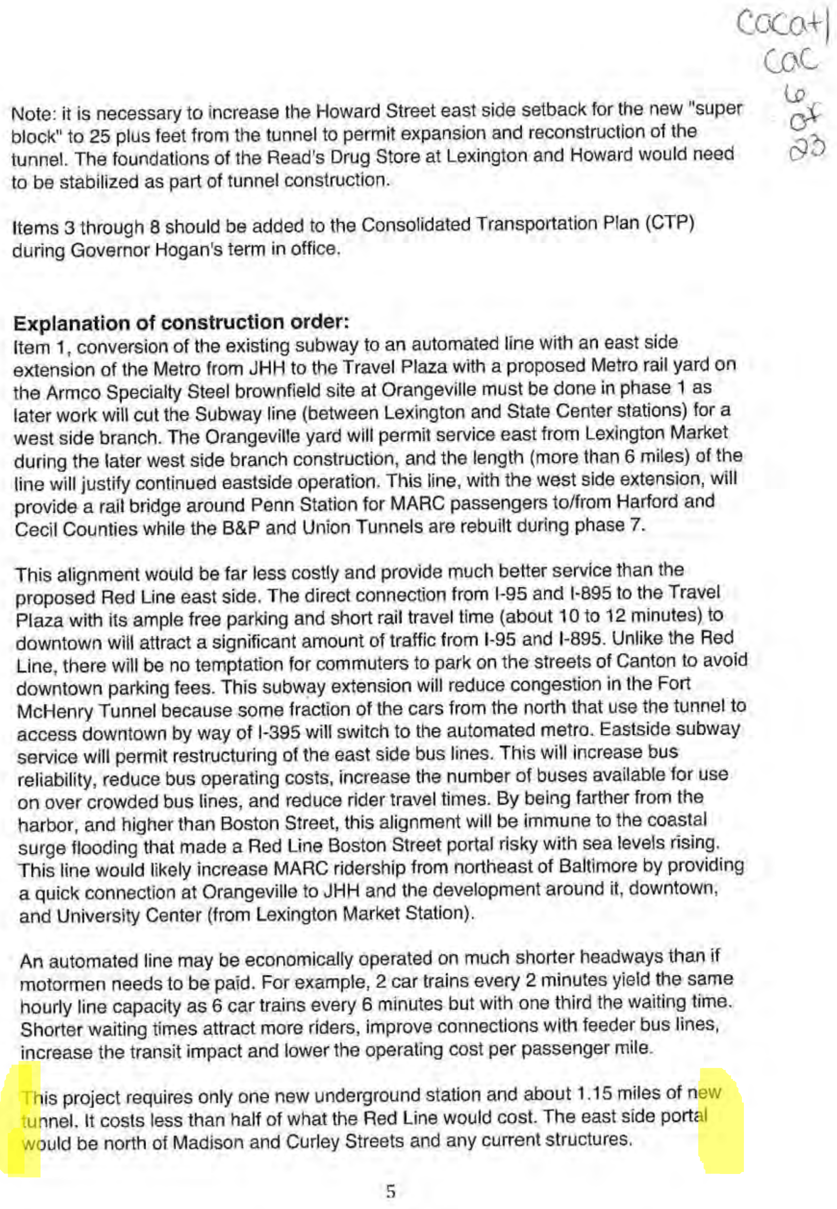
In November 2005, the U. S. Department of Transportation Federal Railroad Administration issued "Report to Congress: Baltimore's Railroad Network: Challenges and Alternatives" (The FRA 2005 report) that says

> In the end, each of the competing carriers built its own, inferior right-of-way, compromising even the then-prevailing standards for gradient, curvature, and operating efficiency. Despite subsequent improvements, today's network — still reliant on the Baltimore & Potomac (B&P), Union, and Howard Street Tunnels for connectivity — is essentially the same as the geometrically compromised and operationally handicapped system cobbled together during the post-Civil War decades.
>
> Although convoluted and antiquated, Baltimore's railroads have strategic importance far beyond the confines of their immediate region. Originating and terminating rail freight traffic in the Baltimore region remains significant, largely due to the Port — which ranks fourth among Atlantic Coast ports, and is the closest Atlantic port to major Midwestern markets — and the region's remaining industrial base. Through freight traffic is important on the CSXT's traffic lanes traversing Baltimore between

1

COMMENTS

RESPONSES



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Note: it is necessary to increase the Howard Street east side setback for the new "super block" to 25 plus feet from the tunnel to permit expansion and reconstruction of the tunnel. The foundations of the Read's Drug Store at Lexington and Howard would need to be stabilized as part of tunnel construction.

Items 3 through 8 should be added to the Consolidated Transportation Plan (CTP) during Governor Hogan's term in office.

Explanation of construction order:

Item 1, conversion of the existing subway to an automated line with an east side extension of the Metro from JHH to the Travel Plaza with a proposed Metro rail yard on the Armco Specialty Steel brownfield site at Orangeville must be done in phase 1 as later work will cut the Subway line (between Lexington and State Center stations) for a west side branch. The Orangeville yard will permit service east from Lexington Market during the later west side branch construction, and the length (more than 6 miles) of the line will justify continued eastside operation. This line, with the west side extension, will provide a rail bridge around Penn Station for MARC passengers to/from Harford and Cecil Counties while the B&P and Union Tunnels are rebuilt during phase 7.

This alignment would be far less costly and provide much better service than the proposed Red Line east side. The direct connection from I-95 and I-895 to the Travel Plaza with its ample free parking and short rail travel time (about 10 to 12 minutes) to downtown will attract a significant amount of traffic from I-95 and I-895. Unlike the Red Line, there will be no temptation for commuters to park on the streets of Canton to avoid downtown parking fees. This subway extension will reduce congestion in the Fort McHenry Tunnel because some fraction of the cars from the north that use the tunnel to access downtown by way of I-395 will switch to the automated metro. Eastside subway service will permit restructuring of the east side bus lines. This will increase bus reliability, reduce bus operating costs, increase the number of buses available for use on over crowded bus lines, and reduce rider travel times. By being farther from the harbor, and higher than Boston Street, this alignment will be immune to the coastal surge flooding that made a Red Line Boston Street portal risky with sea levels rising. This line would likely increase MARC ridership from northeast of Baltimore by providing a quick connection at Orangeville to JHH and the development around it, downtown, and University Center (from Lexington Market Station).

An automated line may be economically operated on much shorter headways than if motormen needs to be paid. For example, 2 car trains every 2 minutes yield the same hourly line capacity as 6 car trains every 6 minutes but with one third the waiting time. Shorter waiting times attract more riders, improve connections with feeder bus lines, increase the transit impact and lower the operating cost per passenger mile.

This project requires only one new underground station and about 1.15 miles of new tunnel. It costs less than half of what the Red Line would cost. The east side portal would be north of Madison and Curley Streets and any current structures.

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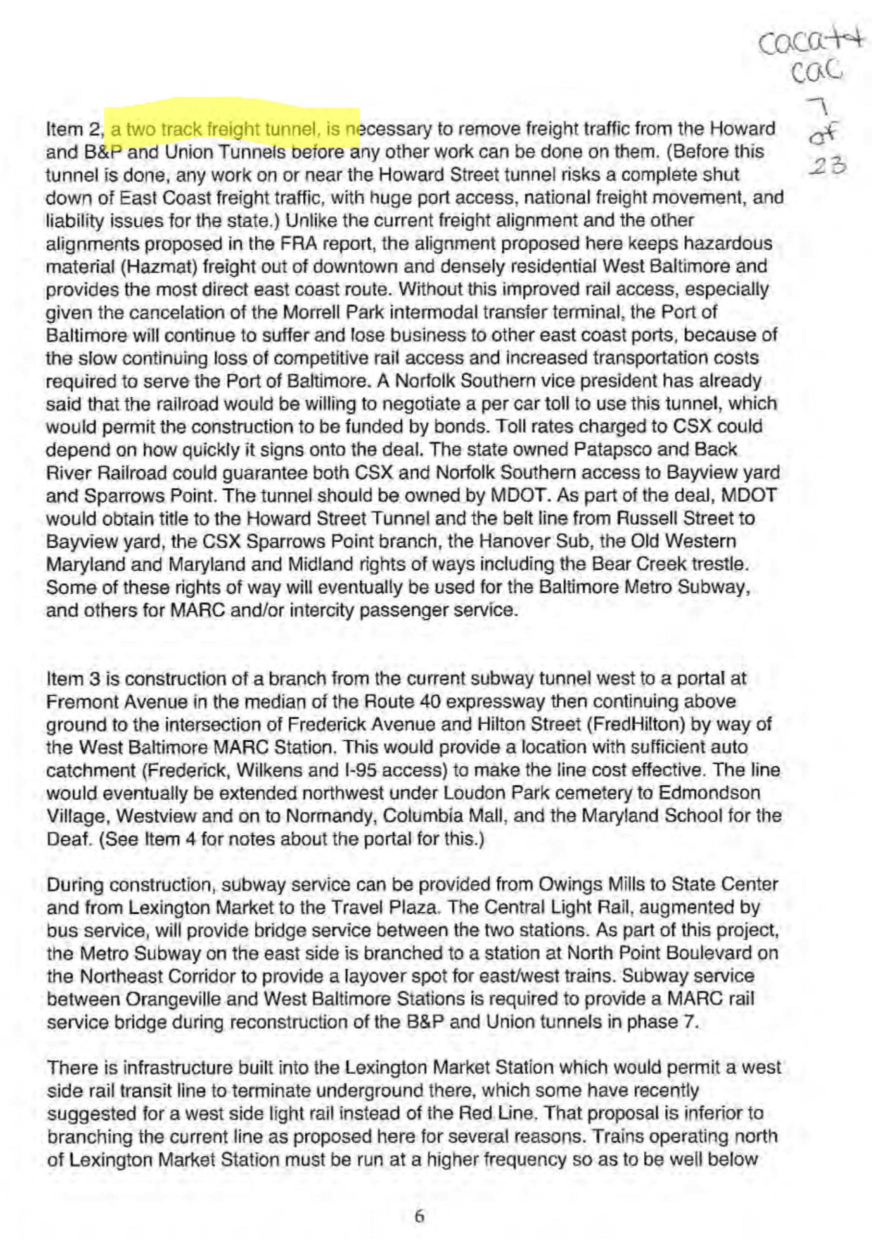
COMMENTS

RESPONSES



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Item 2, a two track freight tunnel, is necessary to remove freight traffic from the Howard and B&P and Union Tunnels before any other work can be done on them. (Before this tunnel is done, any work on or near the Howard Street tunnel risks a complete shut down of East Coast freight traffic, with huge port access, national freight movement, and liability issues for the state.) Unlike the current freight alignment and the other alignments proposed in the FRA report, the alignment proposed here keeps hazardous material (Hazmat) freight out of downtown and densely residential West Baltimore and provides the most direct east coast route. Without this improved rail access, especially given the cancelation of the Morrell Park intermodal transfer terminal, the Port of Baltimore will continue to suffer and lose business to other east coast ports, because of the slow continuing loss of competitive rail access and increased transportation costs required to serve the Port of Baltimore. A Norfolk Southern vice president has already said that the railroad would be willing to negotiate a per car toll to use this tunnel, which would permit the construction to be funded by bonds. Toll rates charged to CSX could depend on how quickly it signs onto the deal. The state owned Patapsco and Back River Railroad could guarantee both CSX and Norfolk Southern access to Bayview yard and Sparrows Point. The tunnel should be owned by MDOT. As part of the deal, MDOT would obtain title to the Howard Street Tunnel and the belt line from Russell Street to Bayview yard, the CSX Sparrows Point branch, the Hanover Sub, the Old Western Maryland and Maryland and Midland rights of ways including the Bear Creek trestle. Some of these rights of way will eventually be used for the Baltimore Metro Subway, and others for MARC and/or intercity passenger service.

Item 3 is construction of a branch from the current subway tunnel west to a portal at Fremont Avenue in the median of the Route 40 expressway then continuing above ground to the intersection of Frederick Avenue and Hilton Street (FredHilton) by way of the West Baltimore MARC Station. This would provide a location with sufficient auto catchment (Frederick, Wilkens and I-95 access) to make the line cost effective. The line would eventually be extended northwest under Loudon Park cemetery to Edmondson Village, Westview and on to Normandy, Columbia Mall, and the Maryland School for the Deaf. (See Item 4 for notes about the portal for this.)

During construction, subway service can be provided from Owings Mills to State Center and from Lexington Market to the Travel Plaza. The Central Light Rail, augmented by bus service, will provide bridge service between the two stations. As part of this project, the Metro Subway on the east side is branched to a station at North Point Boulevard on the Northeast Corridor to provide a layover spot for east/west trains. Subway service between Orangeville and West Baltimore Stations is required to provide a MARC rail service bridge during reconstruction of the B&P and Union tunnels in phase 7.

There is infrastructure built into the Lexington Market Station which would permit a west side rail transit line to terminate underground there, which some have recently suggested for a west side light rail instead of the Red Line. That proposal is inferior to branching the current line as proposed here for several reasons. Trains operating north of Lexington Market Station must be run at a higher frequency so as to be well below

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COMMENTS

RESPONSES

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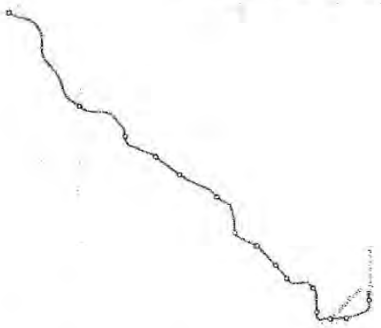
Maps

The following pages show maps of the proposal in steps as it grown.

Page	Description
14	Current Metro Subway line from Owings Mills to Johns Hopkins Hospital
15	Downtown route of current Metro Subway to Johns Hopkins Hospital
15	Phase 1, east side extension from Johns Hopkins Hospital to the Travel Plaza
16	Phase 3, west side, green, extension from Lexington Market Station to FredHilton
16	Phase 6, north/south, blue, route between Westport and Penn Station.
17	View of center city after Metro full build.
18	Full extent of proposed Metro Subway system.
19	Center city view of the full build Metro Subway and MARC systems.
19	Center city view of the full build Amtrak and MARC systems.
20	Full extent of the proposed Metro Subway system with MARC and Amtrak lines.
21	Greater Baltimore region MARC and Amtrak lines.
21	State wide MARC and Amtrak lines.
22	State wide MARC, Amtrak, and freight lines.

Note that all maps on pages 15 to 17 and 19 have the same scale.

Current Baltimore Metro Subway Line



COMMENTS

RESPONSES

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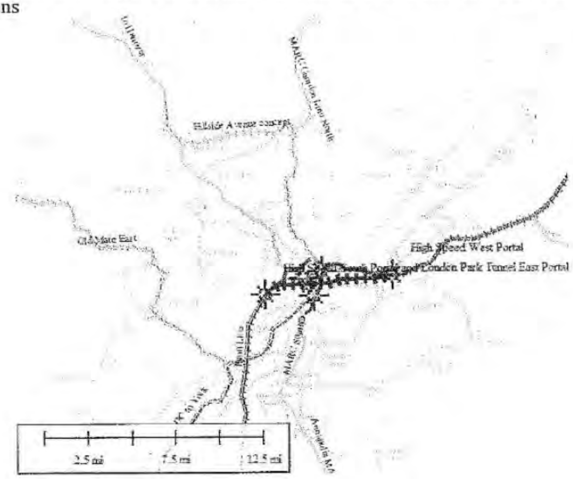
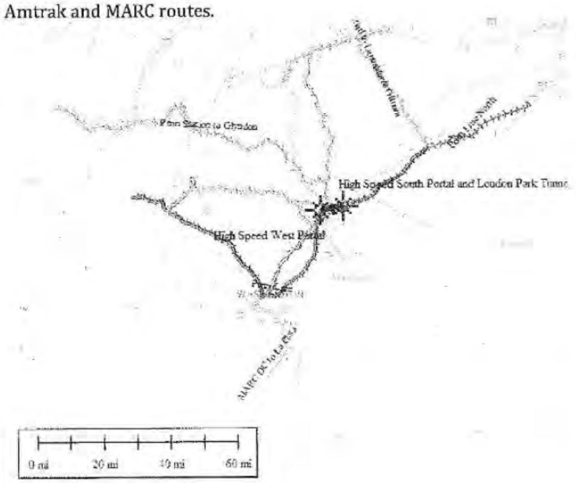
View of the proposed, expanded intercity (Amtrak) and commuter (MARC) passenger routes in the Baltimore Region. Current lines are in wide, bright green. Proposed lines are in a light green (Amtrak and MARC) and purple (MARC only). The high-speed Amtrak tunnel is shown in dark green with cross hatch. See text for a description of routes and destinations

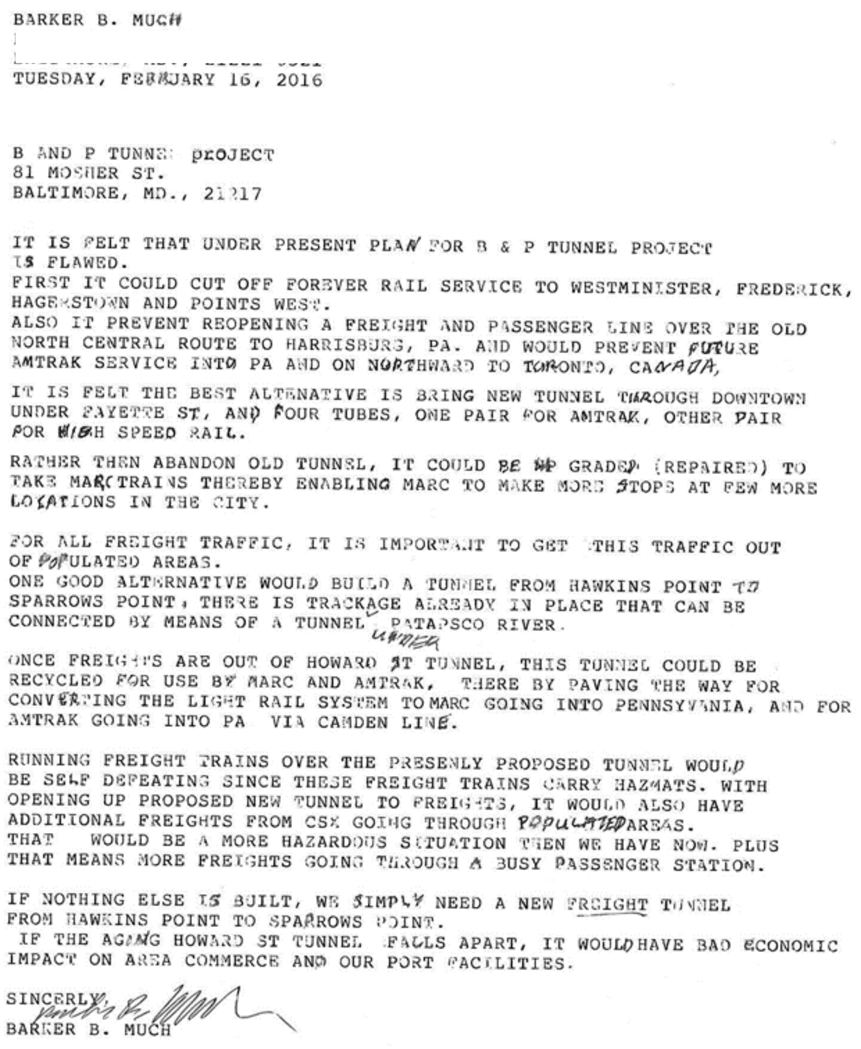


Statewide Amtrak and MARC routes.



COMMENTS

DEIS Comment 72:



BARKER B. MUCH
[redacted]
TUESDAY, FEBRUARY 16, 2016

B AND P TUNNEL PROJECT
81 MOSHER ST.
BALTIMORE, MD., 21217

1 IT IS FELT THAT UNDER PRESENT PLAN FOR B & P TUNNEL PROJECT IS FLAWED.
FIRST IT COULD CUT OFF FOREVER RAIL SERVICE TO WESTMINISTER, FREDERICK, HAGERSTOWN AND POINTS WEST.
ALSO IT PREVENT REOPENING A FREIGHT AND PASSENGER LINE OVER THE OLD NORTH CENTRAL ROUTE TO HARRISBURG, PA. AND WOULD PREVENT FUTURE AMTRAK SERVICE INTO PA AND ON NORTHWARD TO TORONTO, CANADA,

IT IS FELT THE BEST ALTENATIVE IS BRING NEW TUNNEL THROUGH DOWNTOWN UNDER FAYETTE ST, AND FOUR TUBES, ONE PAIR FOR AMTRAK, OTHER PAIR FOR HIGH SPEED RAIL.

2 RATHER THEN ABANDON OLD TUNNEL, IT COULD BE UP GRADED (REPAIRED) TO TAKE MARC TRAINS THEREBY ENABLING MARC TO MAKE MORE STOPS AT FEW MORE LOCATIONS IN THE CITY.

3 FOR ALL FREIGHT TRAFFIC, IT IS IMPORTANT TO GET THIS TRAFFIC OUT OF POPULATED AREAS.
ONE GOOD ALTERNATIVE WOULD BUILD A TUNNEL FROM HAWKINS POINT TO SPARROWS POINT, THERE IS TRACKAGE ALREADY IN PLACE THAT CAN BE CONNECTED BY MEANS OF A TUNNEL UNDER PATAPSCO RIVER.

ONCE FREIGHTS ARE OUT OF HOWARD ST TUNNEL, THIS TUNNEL COULD BE RECYCLED FOR USE BY MARC AND AMTRAK, THERE BY PAVING THE WAY FOR CONVERTING THE LIGHT RAIL SYSTEM TO MARC GOING INTO PENNSYVANIA, AND FOR AMTRAK GOING INTO PA VIA CAMDEN LINE.

4 RUNNING FREIGHT TRAINS OVER THE PRESENLY PROPOSED TUNNEL WOULD BE SELF DEFEATING SINCE THESE FREIGHT TRAINS CARRY HAZMATS. WITH OPENING UP PROPOSED NEW TUNNEL TO FREIGHTS, IT WOULD ALSO HAVE ADDITIONAL FREIGHTS FROM CSX GOING THROUGH POPULATED AREAS.
THAT WOULD BE A MORE HAZARDOUS SITUATION THEN WE HAVE NOW. PLUS THAT MEANS MORE FREIGHTS GOING THROUGH A BUSY PASSENGER STATION.

5 IF NOTHING ELSE IS BUILT, WE SIMPLY NEED A NEW FREIGHT TUNNEL FROM HAWKINS POINT TO SPARROWS POINT.
IF THE AGING HOWARD ST TUNNEL FALLS APART, IT WOULD HAVE BAD ECONOMIC IMPACT ON AREA COMMERCE AND OUR PORT FACILITIES.

SINCERLY,
BARKER B. MUCH

RESPONSES

Response to Comment 1:
This comment is beyond the purview of the Project. The Maryland Department of Transportation oversees comprehensive transportation planning for the State. Prior studies have been performed that evaluate the full network of rail corridors, especially those in and around the Baltimore City. The study of the B&P Tunnel partly resulted from the identification of this Project as a critical component to the greater rail access plan.

The purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, which include:

- Reducing travel time through the B&P Tunnel and along the NEC,
- Accommodating existing and projected travel demand for intercity and commuter passenger services,
- Eliminating impediments to existing and projected operations along the NEC, and

Providing operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

Response to Comment 2:
The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

Amtrak desires to reserve the existing tunnel for a future rail transportation use.

Response to Comment 3:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw

COMMENTS

RESPONSES

if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Response to Comment 4:
NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

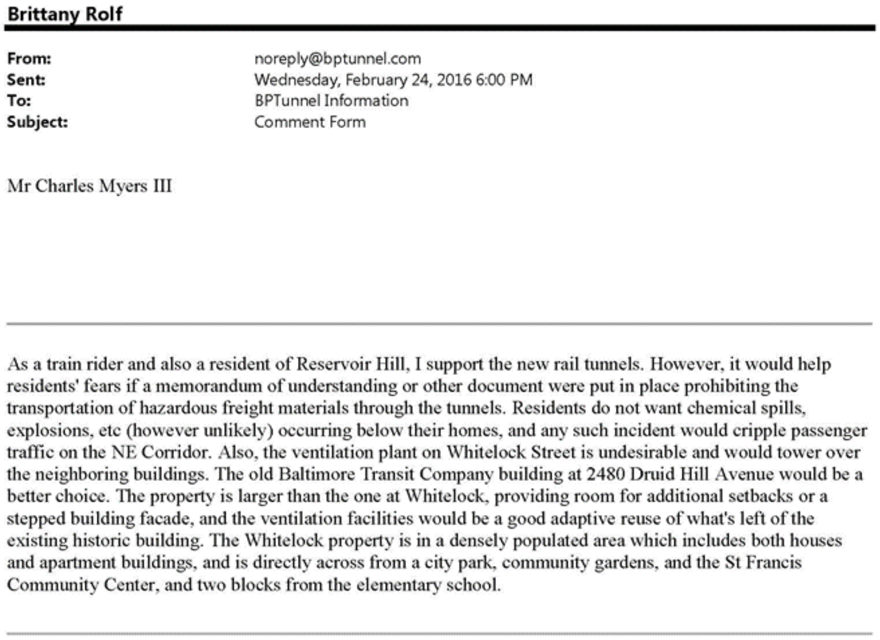
FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Response to Comment 5:
Building an additional tunnel for freight in a new location is beyond the purview of the B&P Tunnel Project.

COMMENTS

DEIS Comment 73:



Brittany Rolf

From: noreply@bptunnel.com
Sent: Wednesday, February 24, 2016 6:00 PM
To: BPTunnel Information
Subject: Comment Form

Mr Charles Myers III

As a train rider and also a resident of Reservoir Hill, I support the new rail tunnels. However, it would help
residents' fears if a memorandum of understanding or other document were put in place prohibiting the
1 transportation of hazardous freight materials through the tunnels. Residents do not want chemical spills,
explosions, etc (however unlikely) occurring below their homes, and any such incident would cripple passenger
traffic on the NE Corridor. Also, the ventilation plant on Whitelock Street is undesirable and would tower over
the neighboring buildings. The old Baltimore Transit Company building at 2480 Druid Hill Avenue would be a
better choice. The property is larger than the one at Whitelock, providing room for additional setbacks or a
stepped building facade, and the ventilation facilities would be a good adaptive reuse of what's left of the
2 existing historic building. The Whitelock property is in a densely populated area which includes both houses
and apartment buildings, and is directly across from a city park, community gardens, and the St Francis
Community Center, and two blocks from the elementary school.

RESPONSES

Response to Comment 1:
NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

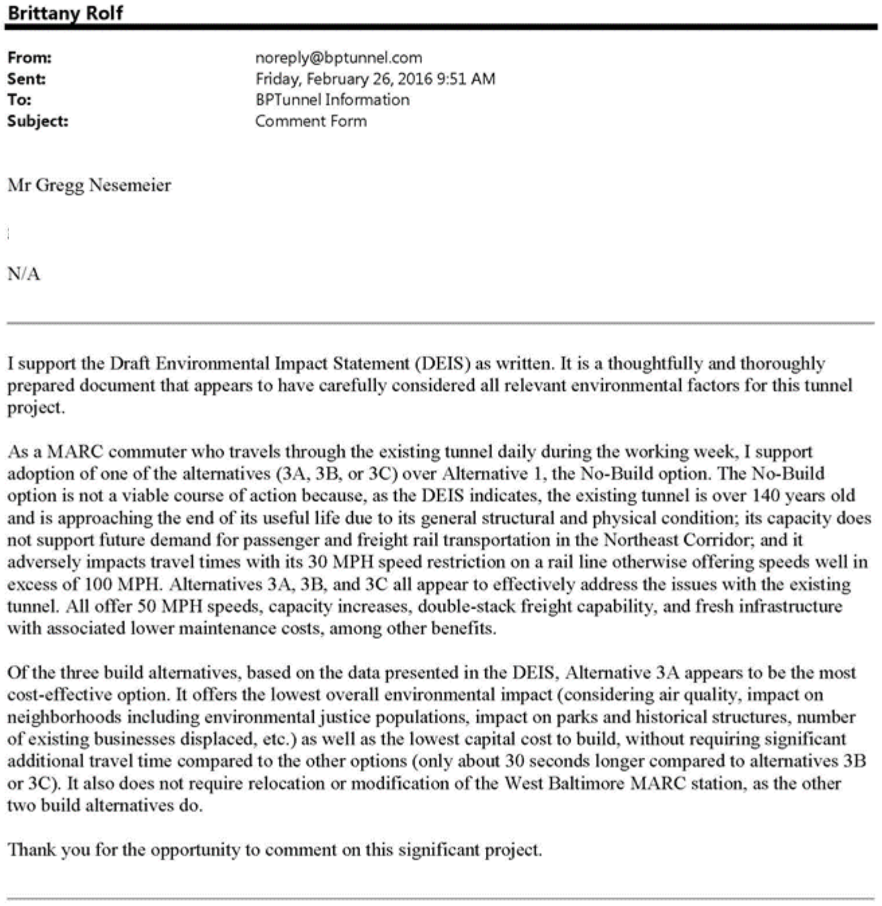
FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Response to Comment 2:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

DEIS Comment 74:



Brittany Rolf

From:	noreply@bptunnel.com
Sent:	Friday, February 26, 2016 9:51 AM
To:	BPTunnel Information
Subject:	Comment Form

Mr Gregg Nesemeier

N/A

I support the Draft Environmental Impact Statement (DEIS) as written. It is a thoughtfully and thoroughly prepared document that appears to have carefully considered all relevant environmental factors for this tunnel project.

As a MARC commuter who travels through the existing tunnel daily during the working week, I support adoption of one of the alternatives (3A, 3B, or 3C) over Alternative 1, the No-Build option. The No-Build option is not a viable course of action because, as the DEIS indicates, the existing tunnel is over 140 years old and is approaching the end of its useful life due to its general structural and physical condition; its capacity does not support future demand for passenger and freight rail transportation in the Northeast Corridor; and it adversely impacts travel times with its 30 MPH speed restriction on a rail line otherwise offering speeds well in excess of 100 MPH. Alternatives 3A, 3B, and 3C all appear to effectively address the issues with the existing tunnel. All offer 50 MPH speeds, capacity increases, double-stack freight capability, and fresh infrastructure with associated lower maintenance costs, among other benefits.

Of the three build alternatives, based on the data presented in the DEIS, Alternative 3A appears to be the most cost-effective option. It offers the lowest overall environmental impact (considering air quality, impact on neighborhoods including environmental justice populations, impact on parks and historical structures, number of existing businesses displaced, etc.) as well as the lowest capital cost to build, without requiring significant additional travel time compared to the other options (only about 30 seconds longer compared to alternatives 3B or 3C). It also does not require relocation or modification of the West Baltimore MARC station, as the other two build alternatives do.

Thank you for the opportunity to comment on this significant project.

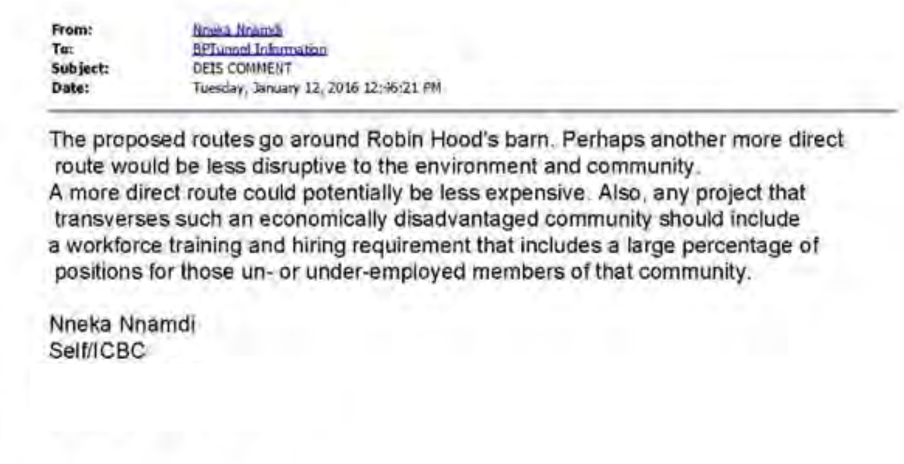
RESPONSES

Thank you for your comment.

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 75:



From: Nneka Nnamdi
To: BPTunnel Information
Subject: DEIS COMMENT
Date: Tuesday, January 12, 2016 12:46:21 PM

1 The proposed routes go around Robin Hood's barn. Perhaps another more direct
route would be less disruptive to the environment and community.
A more direct route could potentially be less expensive. Also, any project that
transverses such an economically disadvantaged community should include
2 a workforce training and hiring requirement that includes a large percentage of
positions for those un- or under-employed members of that community.

Nneka Nnamdi
Self/ICBC

RESPONSES

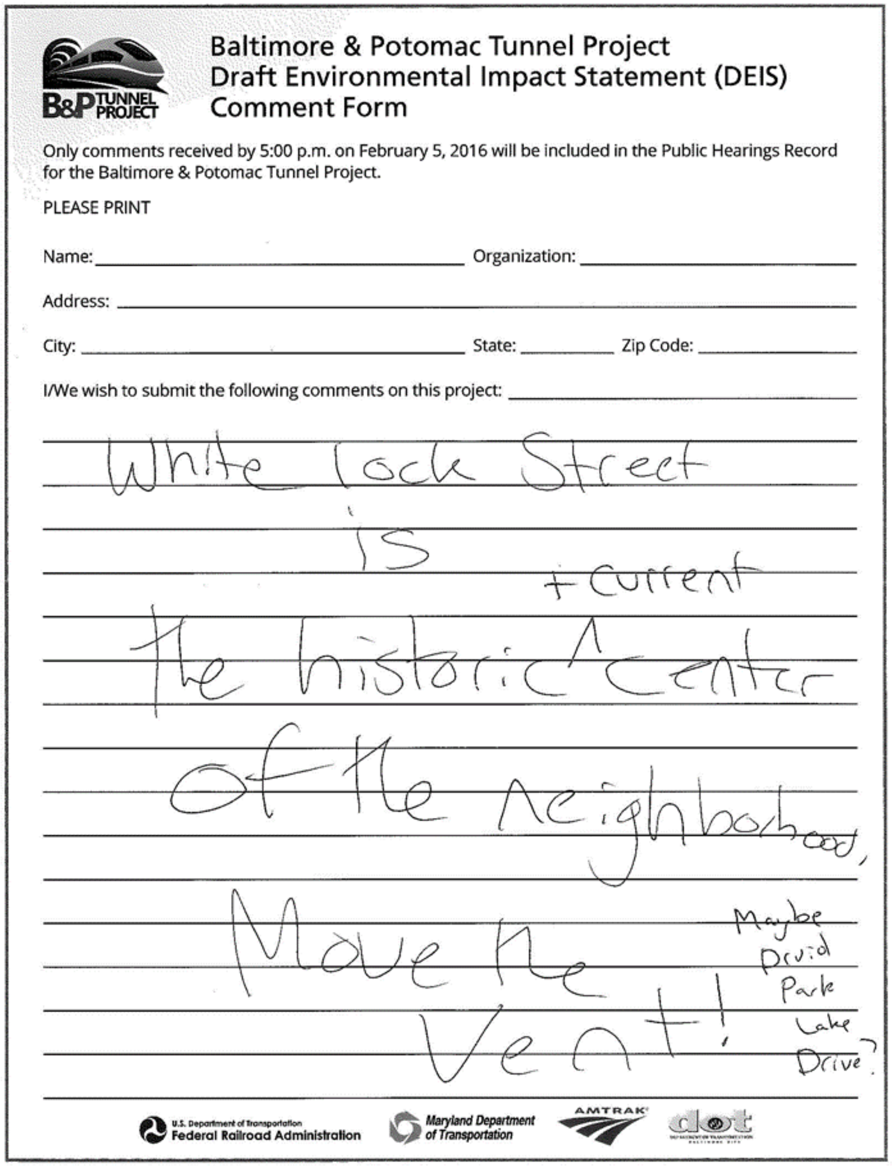
Response to Comment 1:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

Response to Comment 2:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. As part of the mitigation efforts, the Project sponsor would provide coordination with local job training organizations to 1) facilitate targeted job training by providing estimates of the type, number, and timing of jobs expected to be created by project contractors, 2) include in construction contracts goals for nationally targeted workers of social and economic disadvantage, and 3) require project contractors to report on a regular basis their progress in meeting contract goals. The Project sponsor will provide public reporting on job creation. These efforts are ongoing and are documented in this FEIS as described in **Chapter VI.**

COMMENTS

DEIS Comment 76:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: ______ Organization: ______

Address: ______

City: ______ State: ______ Zip Code: ______

I/We wish to submit the following comments on this project:

1 White lock Street is the historic + current center of the neighborhood, Move the Vent! Maybe Druid Park Lake Drive?

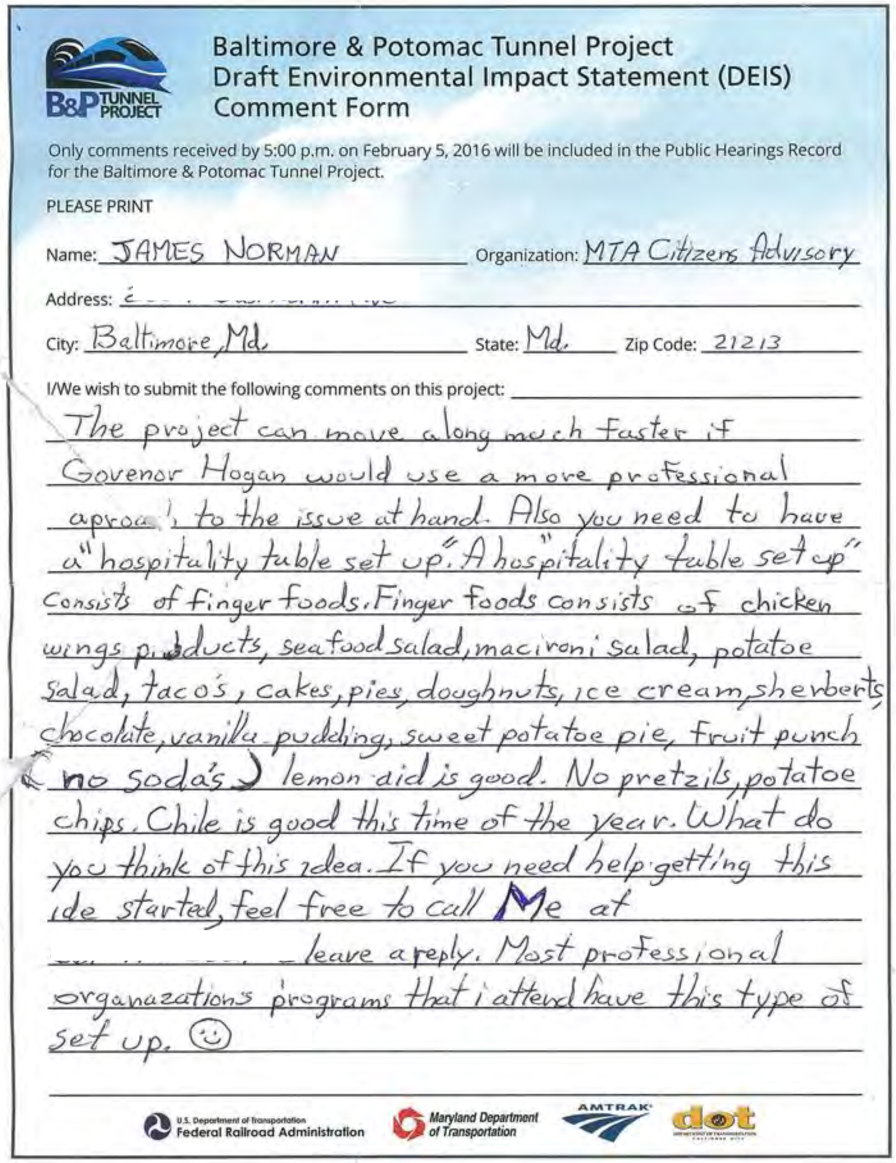
U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK

RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

DEIS Comment 77:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: JAMES NORMAN Organization: MTA Citizens Advisory

Address: [redacted]

City: Baltimore, Md. State: Md. Zip Code: 21213

I/We wish to submit the following comments on this project:

The project can move along much faster if Govenor Hogan would use a more professional aproa[illegible] to the issue at hand. Also you need to have a "hospitality table set up". A hospitality table set up" Consists of finger foods. Finger foods consists of chicken wings products, seafood salad, macironi salad, potatoe salad, taco's, cakes, pies, doughnuts, ice cream, sherberts chocolate, vanilla pudding, sweet potatoe pie, fruit punch (no soda's) lemon aid is good. No pretzils, potatoe chips. Chile is good this time of the year. What do you think of this idea. If you need help getting this ide started, feel free to call Me at [redacted] leave a reply. Most professional organazations programs that i attend have this type of set up. ☺

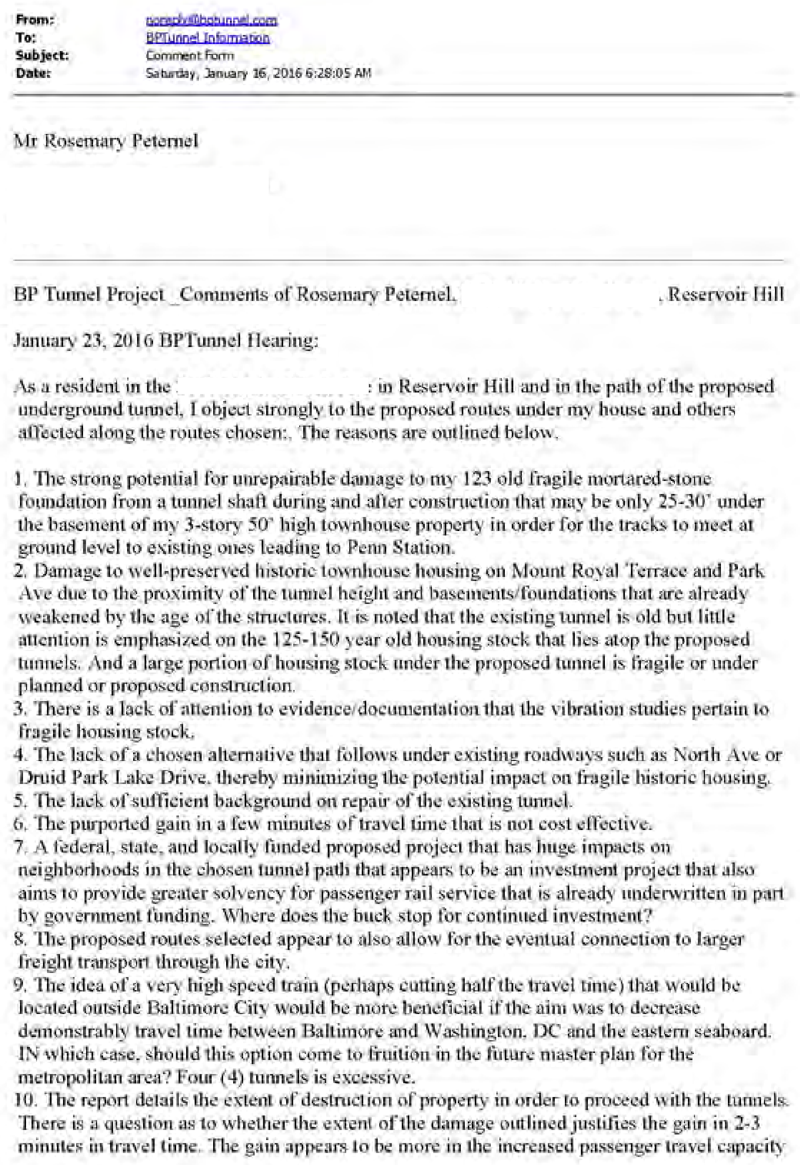
U.S. Department of Transportation Federal Railroad Administration · Maryland Department of Transportation · AMTRAK · dot

RESPONSES

Thank you for your comment.

COMMENTS

DEIS Comment 78:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Saturday, January 16, 2016 6:28:05 AM

Mr Rosemary Peternel

BP Tunnel Project _Comments of Rosemary Peternel, , Reservoir Hill

January 23, 2016 BPTunnel Hearing:

As a resident in the : in Reservoir Hill and in the path of the proposed underground tunnel, I object strongly to the proposed routes under my house and others affected along the routes chosen:. The reasons are outlined below.

1 1. The strong potential for unrepairable damage to my 123 old fragile mortared-stone foundation from a tunnel shaft during and after construction that may be only 25-30' under the basement of my 3-story 50' high townhouse property in order for the tracks to meet at ground level to existing ones leading to Penn Station.
2. Damage to well-preserved historic townhouse housing on Mount Royal Terrace and Park Ave due to the proximity of the tunnel height and basements/foundations that are already weakened by the age of the structures. It is noted that the existing tunnel is old but little attention is emphasized on the 125-150 year old housing stock that lies atop the proposed tunnels. And a large portion of housing stock under the proposed tunnel is fragile or under planned or proposed construction.
3. There is a lack of attention to evidence/documentation that the vibration studies pertain to fragile housing stock.

2 4. The lack of a chosen alternative that follows under existing roadways such as North Ave or Druid Park Lake Drive, thereby minimizing the potential impact on fragile historic housing.
5. The lack of sufficient background on repair of the existing tunnel.
6. The purported gain in a few minutes of travel time that is not cost effective.

3 7. A federal, state, and locally funded proposed project that has huge impacts on neighborhoods in the chosen tunnel path that appears to be an investment project that also aims to provide greater solvency for passenger rail service that is already underwritten in part by government funding. Where does the buck stop for continued investment?

4 8. The proposed routes selected appear to also allow for the eventual connection to larger freight transport through the city.

5 9. The idea of a very high speed train (perhaps cutting half the travel time) that would be located outside Baltimore City would be more beneficial if the aim was to decrease demonstrably travel time between Baltimore and Washington, DC and the eastern seaboard. IN which case, should this option come to fruition in the future master plan for the metropolitan area? Four (4) tunnels is excessive.
10. The report details the extent of destruction of property in order to proceed with the tunnels. There is a question as to whether the extent of the damage outlined justifies the gain in 2-3 minutes in travel time. The gain appears to be more in the increased passenger travel capacity

RESPONSES

Response to Comment 1:

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

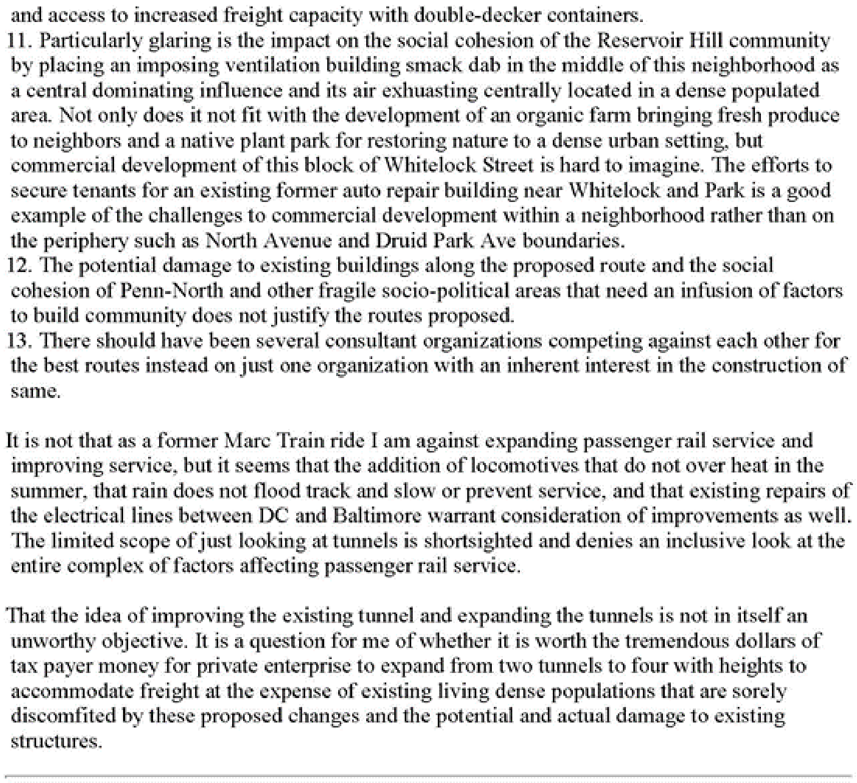
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take

COMMENTS



and access to increased freight capacity with double-decker containers.

6 11. Particularly glaring is the impact on the social cohesion of the Reservoir Hill community by placing an imposing ventilation building smack dab in the middle of this neighborhood as a central dominating influence and its air exhuasting centrally located in a dense populated area. Not only does it not fit with the development of an organic farm bringing fresh produce to neighbors and a native plant park for restoring nature to a dense urban setting, but commercial development of this block of Whitelock Street is hard to imagine. The efforts to secure tenants for an existing former auto repair building near Whitelock and Park is a good example of the challenges to commercial development within a neighborhood rather than on the periphery such as North Avenue and Druid Park Ave boundaries.

7 12. The potential damage to existing buildings along the proposed route and the social cohesion of Penn-North and other fragile socio-political areas that need an infusion of factors to build community does not justify the routes proposed.

13. There should have been several consultant organizations competing against each other for the best routes instead on just one organization with an inherent interest in the construction of same.

8 It is not that as a former Marc Train ride I am against expanding passenger rail service and improving service, but it seems that the addition of locomotives that do not over heat in the summer, that rain does not flood track and slow or prevent service, and that existing repairs of the electrical lines between DC and Baltimore warrant consideration of improvements as well. The limited scope of just looking at tunnels is shortsighted and denies an inclusive look at the entire complex of factors affecting passenger rail service.

That the idea of improving the existing tunnel and expanding the tunnels is not in itself an unworthy objective. It is a question for me of whether it is worth the tremendous dollars of tax payer money for private enterprise to expand from two tunnels to four with heights to accommodate freight at the expense of existing living dense populations that are sorely discomfited by these proposed changes and the potential and actual damage to existing structures.

RESPONSES

place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

Response to Comment 2:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Response to Comment 3:
The Purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, including:

- To reduce travel time through the B&P Tunnel and along the NEC,
- To accommodate existing and projected travel demand for intercity and commuter passenger services,
- To eliminate impediments to existing and projected operations along the NEC, and
- To provide operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore’s rail infrastructure.

COMMENTS

RESPONSES

In addition, the existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

Response to Comment 4:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Response to Comment 5:
The Northeast Corridor (NEC) faces serious challenges to meet current and projected travel demand. Responding to these pressing issues, the FRA initiated the NEC FUTURE Environmental Impact Statement as a comprehensive planning process for future investment in the corridor. The NEC FUTURE identified the B&P Tunnel as one of the segments along the NEC that faces capacity constraints and reliability challenges due to multiple chokepoints and state-of-good-repair needs.

Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

COMMENTS

RESPONSES

While reducing travel time through the B&P Tunnel is one of several goals of the Project, it is not the reason that the Project was initiated. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. Please refer to Response to Comment 3 above for more information regarding Project Purpose and Need.

Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

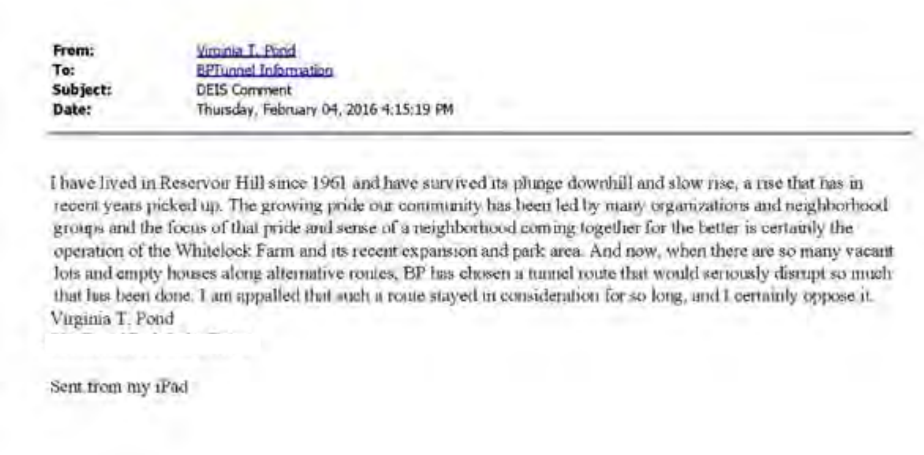
Response to Comment 6:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 7:
The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section

COMMENTS	RESPONSES
	4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**. **Response to Comment 8:** This comment is beyond the purview of the B&P Tunnel Project.

COMMENTS

DEIS Comment 79:



From: Virginia T. Pond
To: BPTunnel Information
Subject: DEIS Comment
Date: Thursday, February 04, 2016 4:15:19 PM

1 I have lived in Reservoir Hill since 1961 and have survived its plunge downhill and slow rise, a rise that has in recent years picked up. The growing pride our community has been led by many organizations and neighborhood groups and the focus of that pride and sense of a neighborhood coming together for the better is certainly the operation of the Whitelock Farm and its recent expansion and park area. And now, when there are so many vacant lots and empty houses along alternative routes, BP has chosen a tunnel route that would seriously disrupt so much that has been done. I am appalled that such a route stayed in consideration for so long, and I certainly oppose it.
Virginia T. Pond

Sent from my iPad

RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

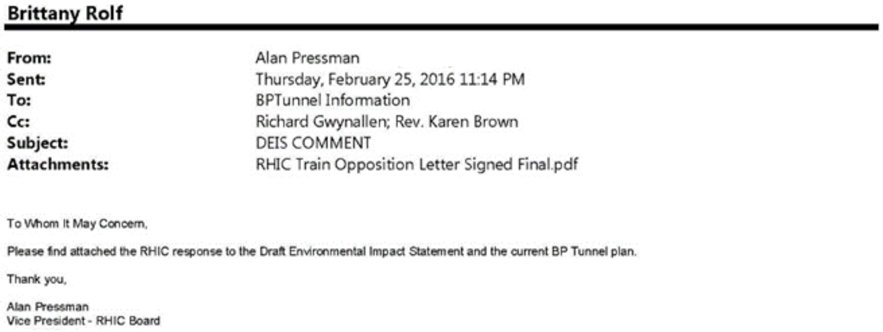
A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

COMMENTS

RESPONSES

DEIS Comment 80:



Brittany Rolf

From: Alan Pressman
Sent: Thursday, February 25, 2016 11:14 PM
To: BPTunnel Information
Cc: Richard Gwynallen; Rev. Karen Brown
Subject: DEIS COMMENT
Attachments: RHIC Train Opposition Letter Signed Final.pdf

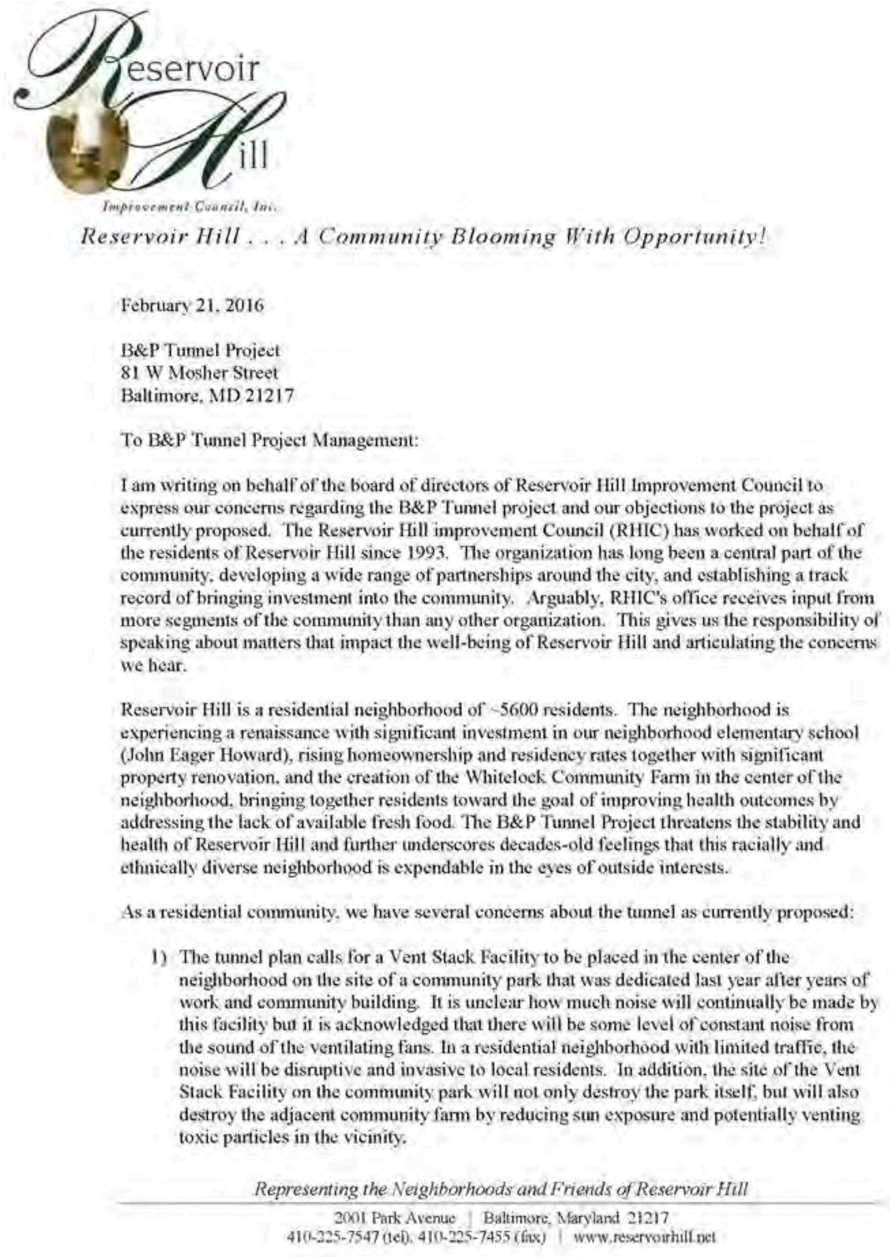
To Whom It May Concern,

Please find attached the RHIC response to the Draft Environmental Impact Statement and the current BP Tunnel plan.

Thank you,

Alan Pressman
Vice President - RHIC Board

COMMENTS



Reservoir Hill

Improvement Council, Inc.

Reservoir Hill . . . A Community Blooming With Opportunity!

February 21, 2016

B&P Tunnel Project
81 W Mosher Street
Baltimore, MD 21217

To B&P Tunnel Project Management:

I am writing on behalf of the board of directors of Reservoir Hill Improvement Council to express our concerns regarding the B&P Tunnel project and our objections to the project as currently proposed. The Reservoir Hill improvement Council (RHIC) has worked on behalf of the residents of Reservoir Hill since 1993. The organization has long been a central part of the community, developing a wide range of partnerships around the city, and establishing a track record of bringing investment into the community. Arguably, RHIC's office receives input from more segments of the community than any other organization. This gives us the responsibility of speaking about matters that impact the well-being of Reservoir Hill and articulating the concerns we hear.

Reservoir Hill is a residential neighborhood of ~5600 residents. The neighborhood is experiencing a renaissance with significant investment in our neighborhood elementary school (John Eager Howard), rising homeownership and residency rates together with significant property renovation, and the creation of the Whitelock Community Farm in the center of the neighborhood, bringing together residents toward the goal of improving health outcomes by addressing the lack of available fresh food. The B&P Tunnel Project threatens the stability and health of Reservoir Hill and further underscores decades-old feelings that this racially and ethnically diverse neighborhood is expendable in the eyes of outside interests.

As a residential community, we have several concerns about the tunnel as currently proposed:

1 1) The tunnel plan calls for a Vent Stack Facility to be placed in the center of the
neighborhood on the site of a community park that was dedicated last year after years of
work and community building. It is unclear how much noise will continually be made by
2 this facility but it is acknowledged that there will be some level of constant noise from
the sound of the ventilating fans. In a residential neighborhood with limited traffic, the
noise will be disruptive and invasive to local residents. In addition, the site of the Vent
3 Stack Facility on the community park will not only destroy the park itself, but will also
destroy the adjacent community farm by reducing sun exposure and potentially venting
toxic particles in the vicinity.

Representing the Neighborhoods and Friends of Reservoir Hill

2001 Park Avenue | Baltimore, Maryland 21217
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RESPONSES

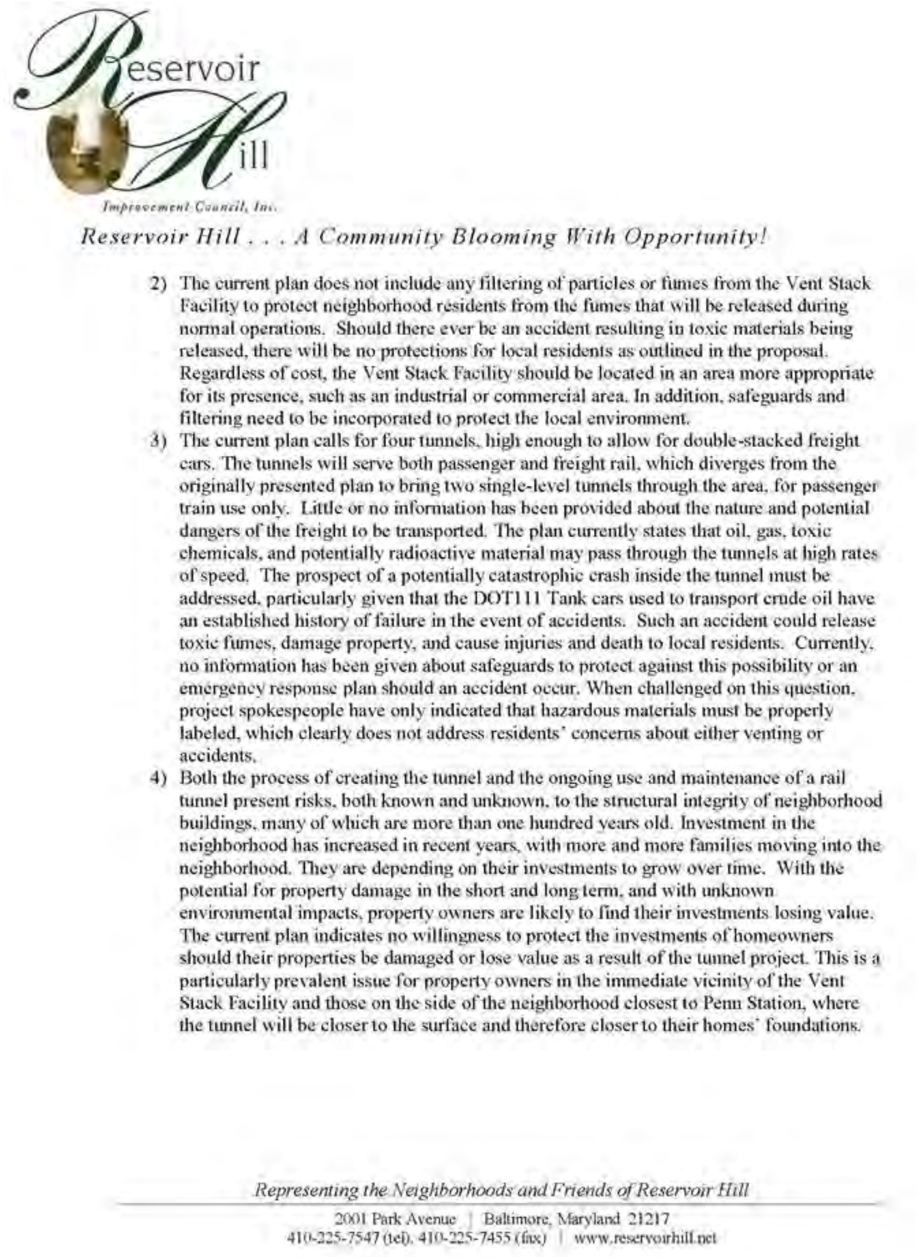
Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 2:
The three ventilation plant facilities would be subject to the operational noise level standards included in the Noise Regulation of the Health Code of Baltimore City § 9-206 Noise Regulation, 2015. This regulation provides the noise limits for manufacturing, commercial, and residential zones in Baltimore City– depending on the source of noise and the types of adjacent land uses. For noise generated within residential zones, there is a limit of 55 dBA at any point on the property line of the use.

Noise levels in the immediate vicinity of the ventilation plant buildings would be caused by the continual operation of the ventilation fans within each facility. The horizontal fans would operate periodically and would generate sound that would propagate through the louvers at the top of the ventilation facilities. Fans would operate periodically when NO_2 levels in the tunnel exceed a set threshold or in emergencies when smoke is present in the tunnel. NO_2 levels are likely to be highest when the level of diesel locomotive operations is highest, or when congestion causes trains to operate slowly or to idle in the tunnel. However, there is not enough information currently available to determine how many hours per day, on average, the fans would run and whether or not they would run during the night.

The design standard for the ventilation facilities would limit the outdoor noise level, when the fans are in operation, to L_{max} 50 dBA at the facility property lines. 50 dBA is approximately the noise produced by an indoor air conditioner at a distance of three feet. To achieve the required reduction in noise level, cylindrical or rectangular sound attenuators would be mounted directly to each fan or to the ductwork within the system. In addition, the building itself would partially shield noise from the interior of the ventilation plant, which would further reduce noise levels outside of the building. The Preliminary Engineering Team has stated that the ventilation plant facilities, with attenuators installed, will emit noise at 45 dBA. This would meet the design standard of L_{max} 50 dBA at the facility property lines (i.e., the noise level generated would be less than the design standard).

COMMENTS



Reservoir Hill
Improvement Council, Inc.

Reservoir Hill . . . A Community Blooming With Opportunity!

3 2) The current plan does not include any filtering of particles or fumes from the Vent Stack Facility to protect neighborhood residents from the fumes that will be released during normal operations. Should there ever be an accident resulting in toxic materials being released, there will be no protections for local residents as outlined in the proposal. Regardless of cost, the Vent Stack Facility should be located in an area more appropriate for its presence, such as an industrial or commercial area. In addition, safeguards and filtering need to be incorporated to protect the local environment.

4 3) The current plan calls for four tunnels, high enough to allow for double-stacked freight cars. The tunnels will serve both passenger and freight rail, which diverges from the originally presented plan to bring two single-level tunnels through the area, for passenger train use only. Little or no information has been provided about the nature and potential dangers of the freight to be transported. The plan currently states that oil, gas, toxic chemicals, and potentially radioactive material may pass through the tunnels at high rates of speed. The prospect of a potentially catastrophic crash inside the tunnel must be addressed, particularly given that the DOT111 Tank cars used to transport crude oil have an established history of failure in the event of accidents. Such an accident could release toxic fumes, damage property, and cause injuries and death to local residents. Currently, no information has been given about safeguards to protect against this possibility or an emergency response plan should an accident occur. When challenged on this question, project spokespeople have only indicated that hazardous materials must be properly labeled, which clearly does not address residents' concerns about either venting or accidents.

5 4) Both the process of creating the tunnel and the ongoing use and maintenance of a rail tunnel present risks, both known and unknown, to the structural integrity of neighborhood buildings, many of which are more than one hundred years old. Investment in the neighborhood has increased in recent years, with more and more families moving into the neighborhood. They are depending on their investments to grow over time. With the potential for property damage in the short and long term, and with unknown environmental impacts, property owners are likely to find their investments losing value. The current plan indicates no willingness to protect the investments of homeowners should their properties be damaged or lose value as a result of the tunnel project. This is a particularly prevalent issue for property owners in the immediate vicinity of the Vent Stack Facility and those on the side of the neighborhood closest to Penn Station, where the tunnel will be closer to the surface and therefore closer to their homes' foundations.

RESPONSES

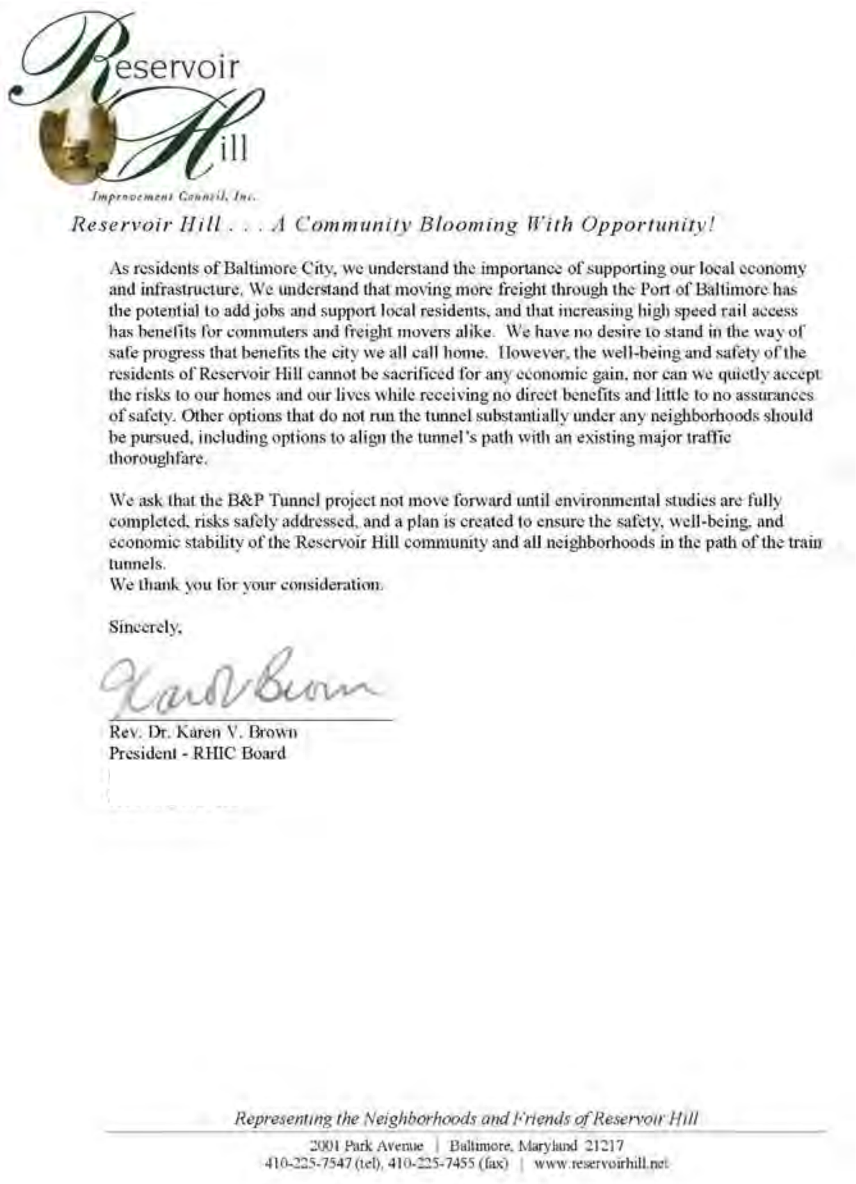
Response to Comment 3:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality; emissions would fall within all acceptable federal air quality standards. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, which have been set to safeguard public health. Because the concentrations of NO_2 were modeled to be within acceptable levels, all other criteria pollutant concentrations would be within NAAQS, as NOx is the most strictly regulated air pollutant generated from diesel locomotive operation. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

The ventilation facilities would be an essential Life/Safety component of the build alternatives, beyond their function of providing emergency access/egress for the tunnels. The ventilation facilities would include an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, and silencers and dampers. In the unlikely event of a fire, smoke could emerge from the vents, as is the case with any structural fire. The ventilation facilities and fans are built so that smoke emerging from the Tunnel would be projected up and away from the community. In the very rare event of a tunnel fire, the path from a tunnel fire to the exhaust louvers is long and circuitous, with many bends that reduce the ability of particles to travel through the fans and louvers.

Response to Comment 4:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

The Northeast Corridor (NEC) faces serious challenges to meet current and projected travel demand. Responding to these pressing issues, the FRA initiated the NEC FUTURE

COMMENTS



Reservoir Hill

Improvement Council, Inc.

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As residents of Baltimore City, we understand the importance of supporting our local economy and infrastructure. We understand that moving more freight through the Port of Baltimore has the potential to add jobs and support local residents, and that increasing high speed rail access has benefits for commuters and freight movers alike. We have no desire to stand in the way of safe progress that benefits the city we all call home. However, the well-being and safety of the residents of Reservoir Hill cannot be sacrificed for any economic gain, nor can we quietly accept the risks to our homes and our lives while receiving no direct benefits and little to no assurances of safety. Other options that do not run the tunnel substantially under any neighborhoods should be pursued, including options to align the tunnel's path with an existing major traffic thoroughfare.

We ask that the B&P Tunnel project not move forward until environmental studies are fully completed, risks safely addressed, and a plan is created to ensure the safety, well-being, and economic stability of the Reservoir Hill community and all neighborhoods in the path of the train tunnels.
We thank you for your consideration.

Sincerely,

Rev. Dr. Karen V. Brown
President - RHIC Board

Representing the Neighborhoods and Friends of Reservoir Hill

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RESPONSES

Environmental Impact Statement as a comprehensive planning process for future investment in the corridor. The NEC FUTURE identified the B&P Tunnel as one of the segments along the NEC that faces capacity constraints and reliability challenges due to multiple chokepoints and state-of-good-repair needs.

Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

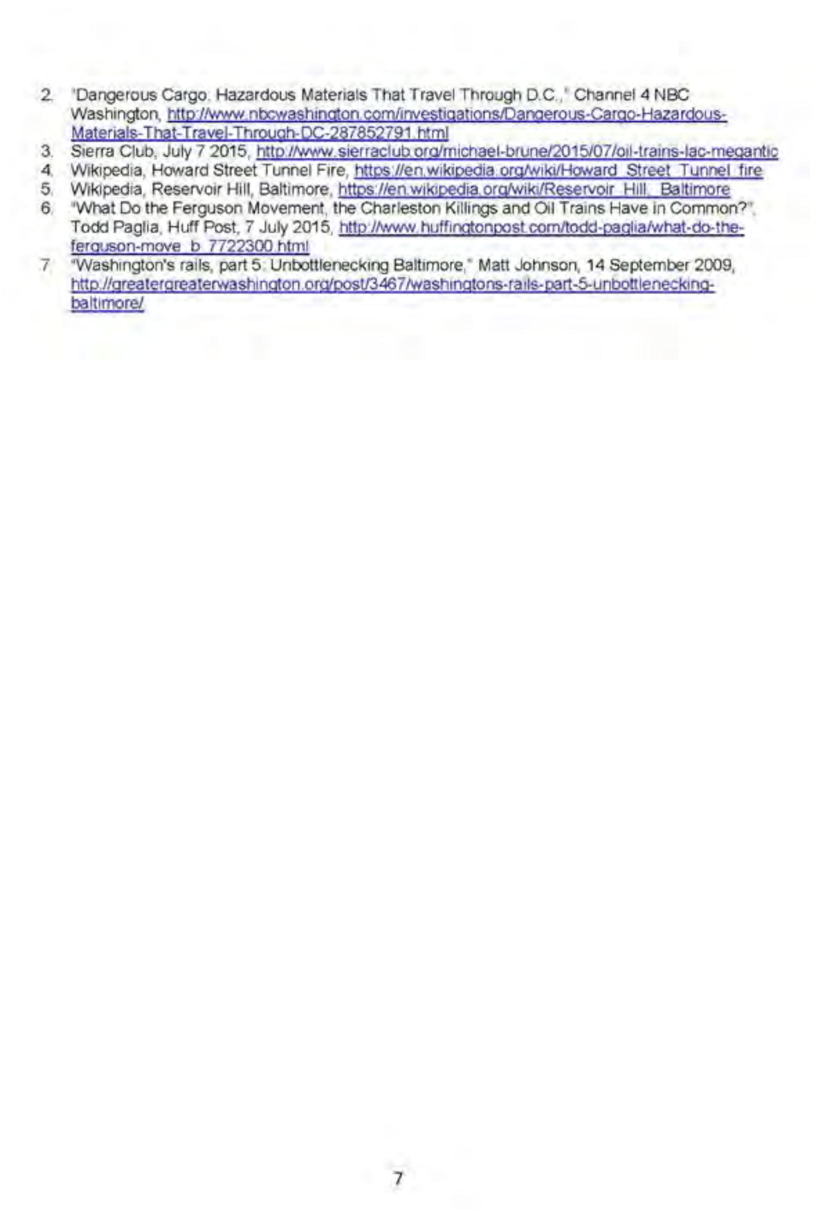
> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future

Response to Comment 5:

COMMENTS



2. "Dangerous Cargo: Hazardous Materials That Travel Through D.C.," Channel 4 NBC Washington, http://www.nbcwashington.com/investigations/Dangerous-Cargo-Hazardous-Materials-That-Travel-Through-DC-287852791.html
3. Sierra Club, July 7 2015, http://www.sierraclub.org/michael-brune/2015/07/oil-trains-lac-megantic
4. Wikipedia, Howard Street Tunnel Fire, https://en.wikipedia.org/wiki/Howard_Street_Tunnel_fire
5. Wikipedia, Reservoir Hill, Baltimore, https://en.wikipedia.org/wiki/Reservoir_Hill,_Baltimore
6. "What Do the Ferguson Movement, the Charleston Killings and Oil Trains Have in Common?", Todd Paglia, Huff Post, 7 July 2015, http://www.huffingtonpost.com/todd-paglia/what-do-the-ferguson-move_b_7722300.html
7. "Washington's rails, part 5: Unbottlenecking Baltimore," Matt Johnson, 14 September 2009, http://greatergreaterwashington.org/post/3467/washingtons-rails-part-5-unbottlenecking-baltimore/

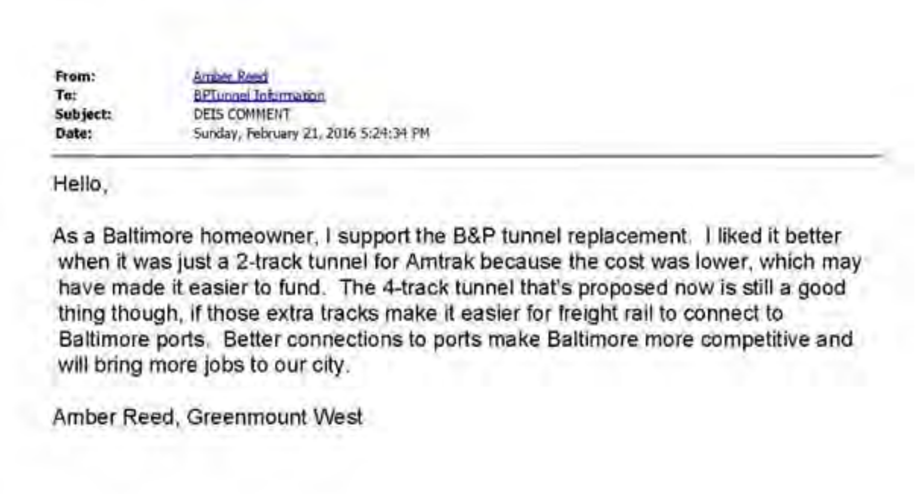
7

RESPONSES

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be fully compensated for the cost of repairs.

COMMENTS

DEIS Comment 81:



From: Amber Reed
To: BPTunnel Information
Subject: DEIS COMMENT
Date: Sunday, February 21, 2016 5:24:34 PM

Hello,

As a Baltimore homeowner, I support the B&P tunnel replacement. I liked it better when it was just a 2-track tunnel for Amtrak because the cost was lower, which may have made it easier to fund. The 4-track tunnel that's proposed now is still a good thing though, if those extra tracks make it easier for freight rail to connect to Baltimore ports. Better connections to ports make Baltimore more competitive and will bring more jobs to our city.

Amber Reed, Greenmount West

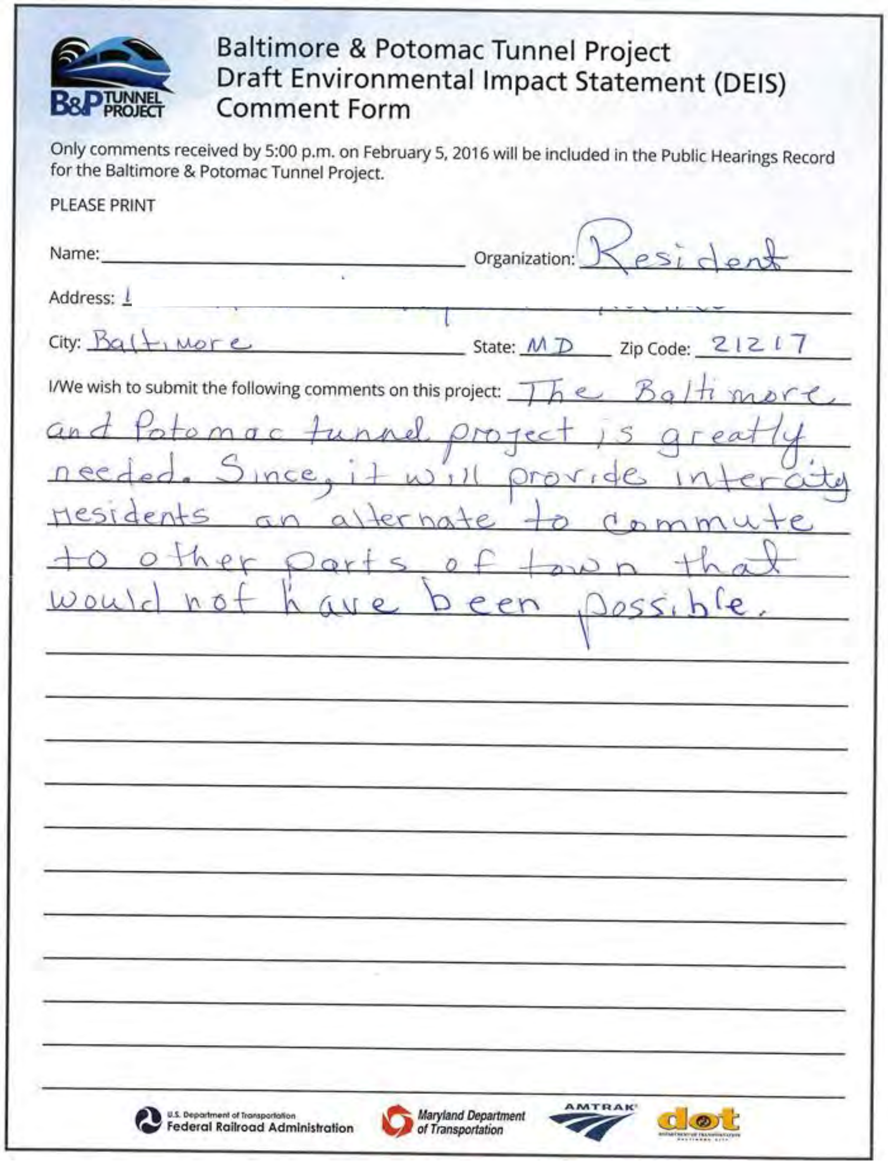
RESPONSES

Thank you for your comment.

COMMENTS

RESPONSES

DEIS Comment 82:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Organization: Resident

Address: [redacted]

City: Baltimore State: MD Zip Code: 21217

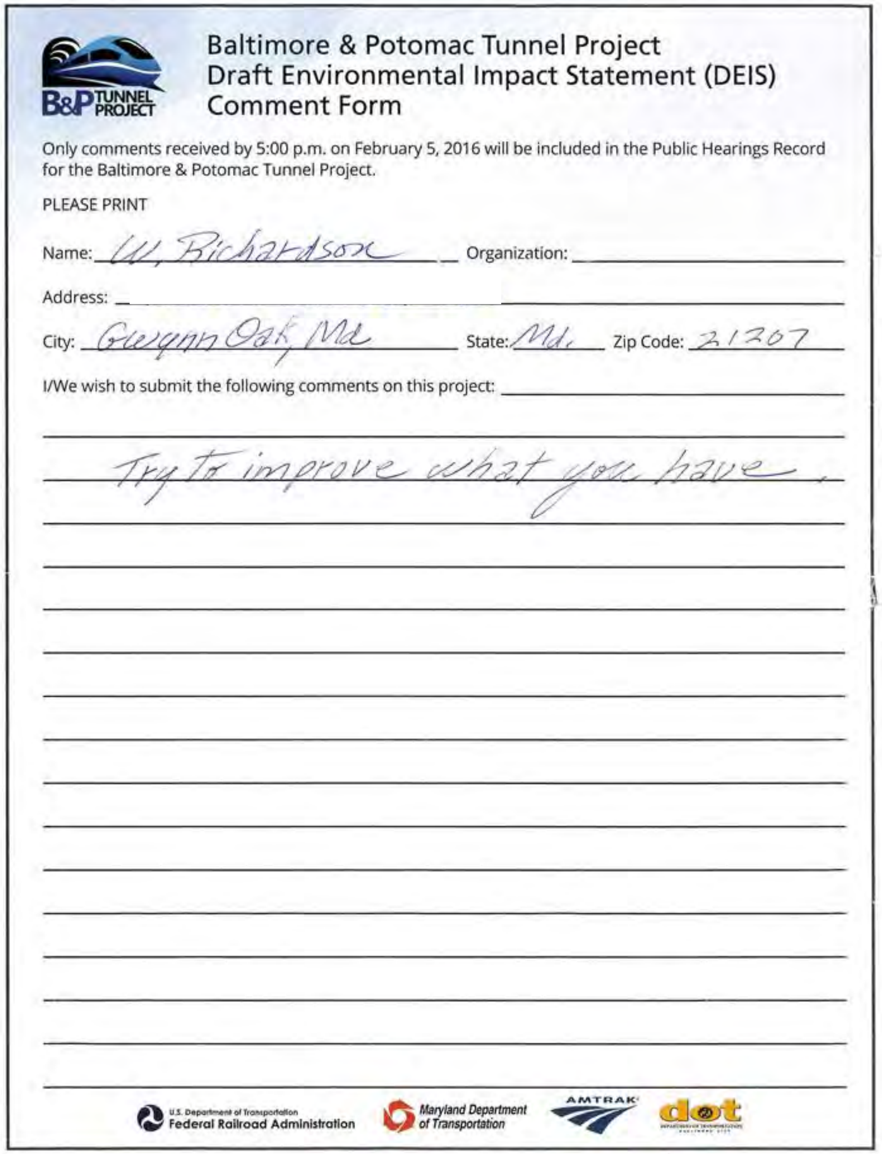
I/We wish to submit the following comments on this project: The Baltimore and Potomac tunnel project is greatly needed. Since, it will provide intercity residents an alternate to commute to other parts of town that would not have been possible.

U.S. Department of Transportation Federal Railroad Administration · Maryland Department of Transportation · AMTRAK · dot

Thank you for your comment.

COMMENTS

DEIS Comment 83:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: W. Richardson Organization:

Address:

City: Gwynn Oak, Md State: Md. Zip Code: 21207

I/We wish to submit the following comments on this project:

1 Try to improve what you have.

U.S. Department of Transportation Federal Railroad Administration · Maryland Department of Transportation · AMTRAK · dot

RESPONSES

Response to Comment 1:

As described in **Chapter III** of the FEIS, Alternative 2: Reconstruct/Modernize Existing Tunnel was eliminated from further consideration for specific engineering and operational reasons. Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including:

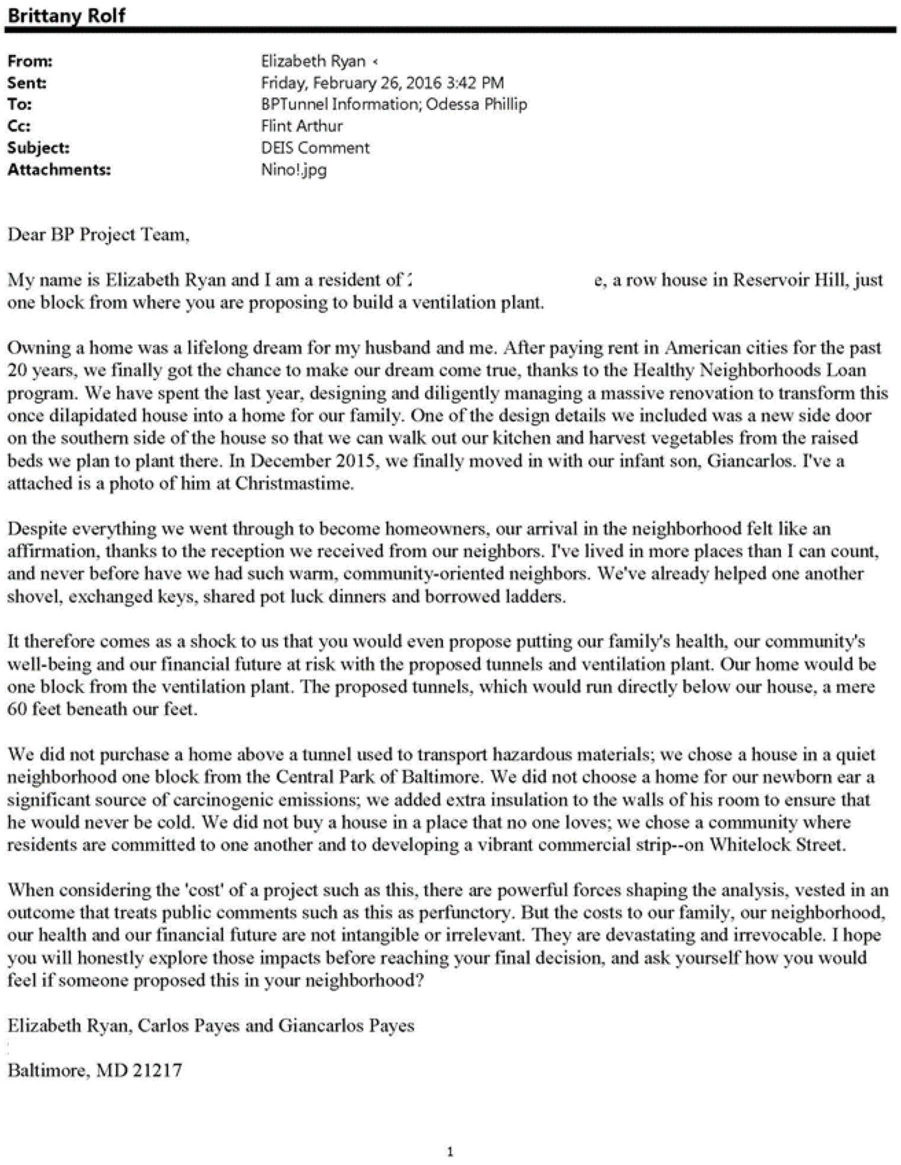
- Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction;
- No parking along Wilson Street or Winchester Street during construction;
- Limitations for residential and commercial access along Wilson Street and Winchester Street during construction;
- Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park;
- Substantial residential property impacts; and
- Severe impacts to North Avenue, central Light Rail line, and CSX Main Line operations due to open cut construction through North Avenue, light rail, and CSX track beds.

Additionally, for construction to advance, at minimum, one track would have to be removed from service. It would be impossible to provide adequate NEC service using a single track, particularly as ridership and train frequency increase over time.

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 84:



Brittany Rolf

From: Elizabeth Ryan <
Sent: Friday, February 26, 2016 3:42 PM
To: BPTunnel Information; Odessa Phillip
Cc: Flint Arthur
Subject: DEIS Comment
Attachments: Nino!.jpg

Dear BP Project Team,

1 My name is Elizabeth Ryan and I am a resident of e, a row house in Reservoir Hill, just one block from where you are proposing to build a ventilation plant.

Owning a home was a lifelong dream for my husband and me. After paying rent in American cities for the past 20 years, we finally got the chance to make our dream come true, thanks to the Healthy Neighborhoods Loan program. We have spent the last year, designing and diligently managing a massive renovation to transform this once dilapidated house into a home for our family. One of the design details we included was a new side door on the southern side of the house so that we can walk out our kitchen and harvest vegetables from the raised beds we plan to plant there. In December 2015, we finally moved in with our infant son, Giancarlos. I've a attached is a photo of him at Christmastime.

Despite everything we went through to become homeowners, our arrival in the neighborhood felt like an affirmation, thanks to the reception we received from our neighbors. I've lived in more places than I can count, and never before have we had such warm, community-oriented neighbors. We've already helped one another shovel, exchanged keys, shared pot luck dinners and borrowed ladders.

2 It therefore comes as a shock to us that you would even propose putting our family's health, our community's well-being and our financial future at risk with the proposed tunnels and ventilation plant. Our home would be one block from the ventilation plant. The proposed tunnels, which would run directly below our house, a mere 60 feet beneath our feet.

3 We did not purchase a home above a tunnel used to transport hazardous materials; we chose a house in a quiet neighborhood one block from the Central Park of Baltimore. We did not choose a home for our newborn ear a significant source of carcinogenic emissions; we added extra insulation to the walls of his room to ensure that he would never be cold. We did not buy a house in a place that no one loves; we chose a community where residents are committed to one another and to developing a vibrant commercial strip--on Whitelock Street.

4 When considering the 'cost' of a project such as this, there are powerful forces shaping the analysis, vested in an outcome that treats public comments such as this as perfunctory. But the costs to our family, our neighborhood, our health and our financial future are not intangible or irrelevant. They are devastating and irrevocable. I hope you will honestly explore those impacts before reaching your final decision, and ask yourself how you would feel if someone proposed this in your neighborhood?

Elizabeth Ryan, Carlos Payes and Giancarlos Payes

Baltimore, MD 21217

1

RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 2:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

The build alternatives will have an average tunnel depth of 115 feet. All of the proposed project infrastructure will be designed, constructed, and maintained using proven modern design and safety standards. The Project will be designed in accordance with applicable regulations, oversight agency guidance, and knowledge of safety standards to ensure optimal conditions and safety throughout construction.

Response to Comment 3:
NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate*

COMMENTS

RESPONSES

> *compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

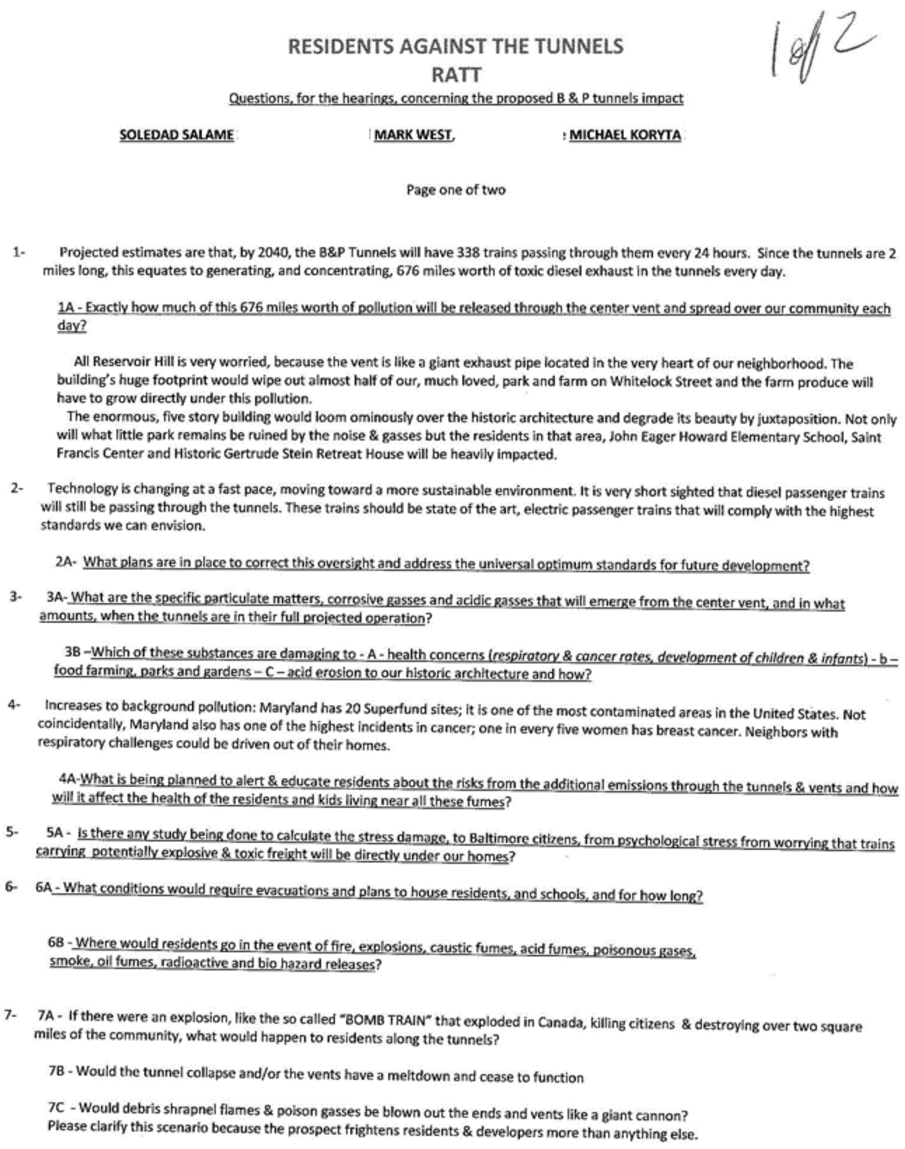
The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Chapter VI of this FEIS specifically reviewed Air Quality, Water, Soil, and Hazardous Material impacts on Children's Health. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of $NO_{x,}$ VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

Response to Comment 4:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

DEIS Comment 85:



1 of 2

RESIDENTS AGAINST THE TUNNELS
RATT
Questions, for the hearings, concerning the proposed B & P tunnels impact

SOLEDAD SALAME MARK WEST, MICHAEL KORYTA

Page one of two

1 1- Projected estimates are that, by 2040, the B&P Tunnels will have 338 trains passing through them every 24 hours. Since the tunnels are 2 miles long, this equates to generating, and concentrating, 676 miles worth of toxic diesel exhaust in the tunnels every day.

1A - Exactly how much of this 676 miles worth of pollution will be released through the center vent and spread over our community each day?

All Reservoir Hill is very worried, because the vent is like a giant exhaust pipe located in the very heart of our neighborhood. The building's huge footprint would wipe out almost half of our, much loved, park and farm on Whitelock Street and the farm produce will have to grow directly under this pollution.

The enormous, five story building would loom ominously over the historic architecture and degrade its beauty by juxtaposition. Not only will what little park remains be ruined by the noise & gasses but the residents in that area, John Eager Howard Elementary School, Saint Francis Center and Historic Gertrude Stein Retreat House will be heavily impacted.

2 2- Technology is changing at a fast pace, moving toward a more sustainable environment. It is very short sighted that diesel passenger trains will still be passing through the tunnels. These trains should be state of the art, electric passenger trains that will comply with the highest standards we can envision.

2A- What plans are in place to correct this oversight and address the universal optimum standards for future development?

3 3- 3A- What are the specific particulate matters, corrosive gasses and acidic gasses that will emerge from the center vent, and in what amounts, when the tunnels are in their full projected operation?

3B –Which of these substances are damaging to - A - health concerns (*respiratory & cancer rates, development of children & infants*) - b – food farming, parks and gardens – C – acid erosion to our historic architecture and how?

4 4- Increases to background pollution: Maryland has 20 Superfund sites; it is one of the most contaminated areas in the United States. Not coincidentally, Maryland also has one of the highest incidents in cancer; one in every five women has breast cancer. Neighbors with respiratory challenges could be driven out of their homes.

4A-What is being planned to alert & educate residents about the risks from the additional emissions through the tunnels & vents and how will it affect the health of the residents and kids living near all these fumes?

5 5- 5A - Is there any study being done to calculate the stress damage, to Baltimore citizens, from psychological stress from worrying that trains carrying potentially explosive & toxic freight will be directly under our homes?

6 6- 6A - What conditions would require evacuations and plans to house residents, and schools, and for how long?

6B - Where would residents go in the event of fire, explosions, caustic fumes, acid fumes, poisonous gases, smoke, oil fumes, radioactive and bio hazard releases?

7 7- 7A - If there were an explosion, like the so called "BOMB TRAIN" that exploded in Canada, killing citizens & destroying over two square miles of the community, what would happen to residents along the tunnels?

7B - Would the tunnel collapse and/or the vents have a meltdown and cease to function

7C - Would debris shrapnel flames & poison gasses be blown out the ends and vents like a giant cannon? Please clarify this scenario because the prospect frightens residents & developers more than anything else.

RESPONSES

Response to Comment 1:

Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

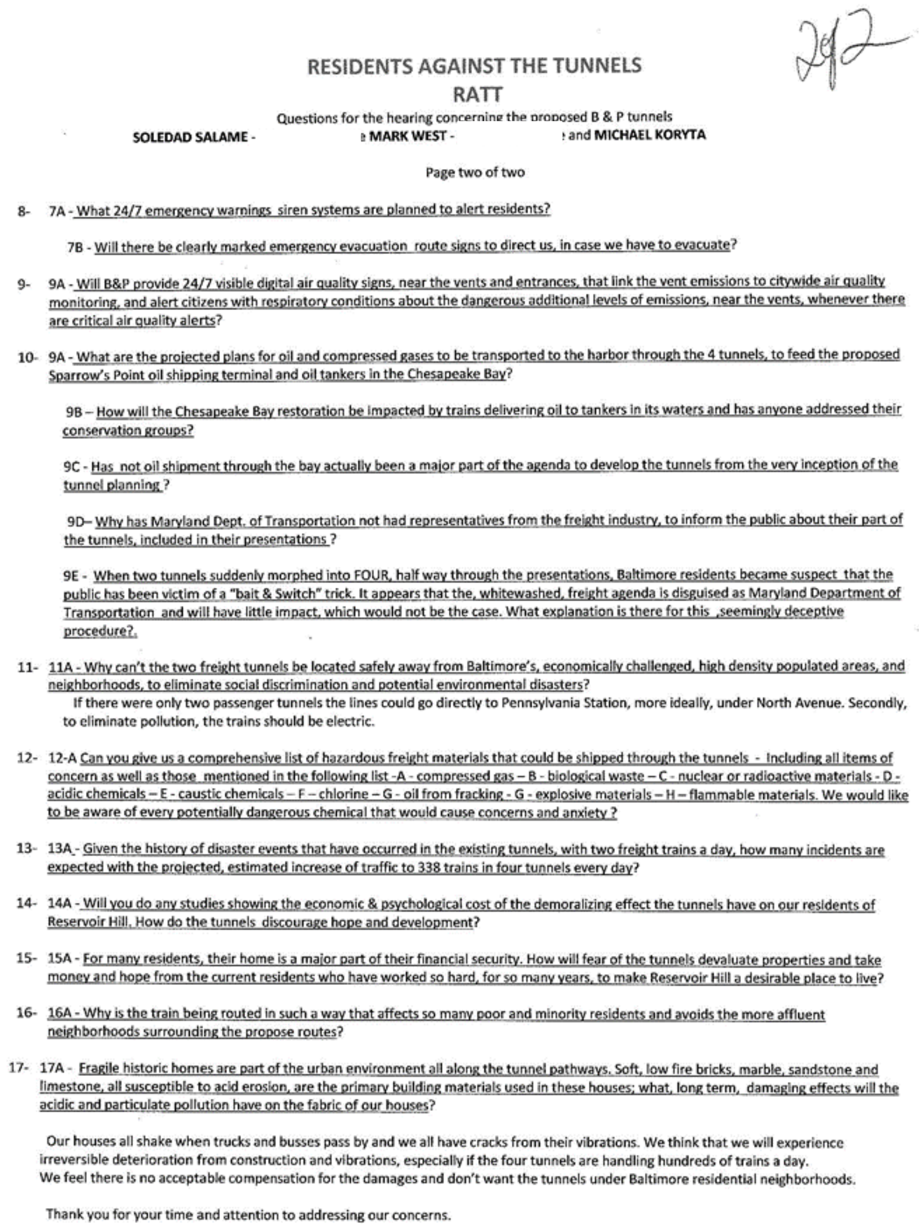
The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am and 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am, and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are in **Chapter VI**.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. National Ambient Air Quality Standards have been established for six common air pollutants, referred to as criteria pollutants--carbon monoxide (CO), lead, nitrogen dioxide (NO2), ozone, particulate matter (PM) which includes particulate matter with a diameter of 10 microns or less (PM10) and PM2.5, and sulfur dioxide (SO2). Nitrogen oxides (NOx) and volatile organic compound (VOC). The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold. NAAQS are set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

The proposed tunnel ventilation system would be designed such that ventilated air will meet federal air quality standards without the use of a filtration system. The ventilation system would be designed to dilute and disperse pollutant levels, so the air quality standards would be met at any location where people may be exposed.

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the

COMMENTS



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RESIDENTS AGAINST THE TUNNELS
RATT
Questions for the hearing concerning the proposed B & P tunnels
SOLEDAD SALAME - e MARK WEST - : and MICHAEL KORYTA

Page two of two

8 8- 7A - What 24/7 emergency warnings siren systems are planned to alert residents?

7B - Will there be clearly marked emergency evacuation route signs to direct us, in case we have to evacuate?

9 9- 9A - Will B&P provide 24/7 visible digital air quality signs, near the vents and entrances, that link the vent emissions to citywide air quality monitoring, and alert citizens with respiratory conditions about the dangerous additional levels of emissions, near the vents, whenever there are critical air quality alerts?

10 10- 9A - What are the projected plans for oil and compressed gases to be transported to the harbor through the 4 tunnels, to feed the proposed Sparrow's Point oil shipping terminal and oil tankers in the Chesapeake Bay?

9B – How will the Chesapeake Bay restoration be impacted by trains delivering oil to tankers in its waters and has anyone addressed their conservation groups?

9C - Has not oil shipment through the bay actually been a major part of the agenda to develop the tunnels from the very inception of the tunnel planning ?

9D– Why has Maryland Dept. of Transportation not had representatives from the freight industry, to inform the public about their part of the tunnels, included in their presentations ?

9E - When two tunnels suddenly morphed into FOUR, half way through the presentations, Baltimore residents became suspect that the public has been victim of a "bait & Switch" trick. It appears that the, whitewashed, freight agenda is disguised as Maryland Department of Transportation and will have little impact, which would not be the case. What explanation is there for this ,seemingly deceptive procedure?.

11 11- 11A - Why can't the two freight tunnels be located safely away from Baltimore's, economically challenged, high density populated areas, and neighborhoods, to eliminate social discrimination and potential environmental disasters?
If there were only two passenger tunnels the lines could go directly to Pennsylvania Station, more ideally, under North Avenue. Secondly, to eliminate pollution, the trains should be electric.

12 12- 12-A Can you give us a comprehensive list of hazardous freight materials that could be shipped through the tunnels - Including all items of concern as well as those mentioned in the following list -A - compressed gas – B - biological waste – C - nuclear or radioactive materials - D - acidic chemicals – E - caustic chemicals – F – chlorine – G - oil from fracking - G - explosive materials – H – flammable materials. We would like to be aware of every potentially dangerous chemical that would cause concerns and anxiety ?

13 13- 13A - Given the history of disaster events that have occurred in the existing tunnels, with two freight trains a day, how many incidents are expected with the projected, estimated increase of traffic to 338 trains in four tunnels every day?

14 14- 14A - Will you do any studies showing the economic & psychological cost of the demoralizing effect the tunnels have on our residents of Reservoir Hill. How do the tunnels discourage hope and development?

15 15- 15A - For many residents, their home is a major part of their financial security. How will fear of the tunnels devaluate properties and take money and hope from the current residents who have worked so hard, for so many years, to make Reservoir Hill a desirable place to live?

16 16- 16A - Why is the train being routed in such a way that affects so many poor and minority residents and avoids the more affluent neighborhoods surrounding the propose routes?

17 17- 17A - Fragile historic homes are part of the urban environment all along the tunnel pathways. Soft, low fire bricks, marble, sandstone and limestone, all susceptible to acid erosion, are the primary building materials used in these houses; what, long term, damaging effects will the acidic and particulate pollution have on the fabric of our houses?

Our houses all shake when trucks and busses pass by and we all have cracks from their vibrations. We think that we will experience irreversible deterioration from construction and vibrations, especially if the four tunnels are handling hundreds of trains a day.
We feel there is no acceptable compensation for the damages and don't want the tunnels under Baltimore residential neighborhoods.

Thank you for your time and attention to addressing our concerns.

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Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 2:
The type of locomotive traveling through the tunnel is determined by the train service operator. As per the 2040 projections, of the 388 daily vehicles running through the Tunnel, 222 will be electric (Acela, NE Regional, and Metropolitan), and 166 will be diesel (2 freight and 164 MARC). Please refer to **Chapter VI** for additional information.

Response to Comment 3:
Analysis of ventilation plant emissions included an air dispersion modeling analysis, which followed the latest US Environmental Protection Agency modeling guidelines for predicting air quality effects for regulated pollutants. The results of the analysis were compared to the stringent 1-hour NO_2 National Ambient Air Quality Standards (NAAQS) of 100 parts per billion (ppb) as opposed to the annual standard of 53 ppb. Emission studies have demonstrated that if NO_2 concentrations are maintained within acceptable levels, then other pollutant concentrations associated with diesel exhaust emissions will also be within acceptable limits. The maximum predicted 1-hour NO_2 concentration from the three ventilation facilities as well as north and south portals was 12.8 ppb. When added to the NO_2 background concentration of 51 ppb, the total predicted 1-hour concentration amounted to 63.8 ppb, which is below the NAAQS of 100 ppb. The maximum predicted 1-hour NO_2 concentration of the intermediate ventilation plant is 2.9 ppb and when combined with NO_2 background concentration of 51 ppb the total NO_2 concentration would be 53.9 ppb, below the NAAQS threshold limits of 100 ppb.

Response to Comment 4:
Children's Health was assessed for Air Quality, Water, Soil and Hazardous Material and is described in **Chapter VI** of this FEIS. build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA. No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water. 112 sites of concern were identified within 1 mile of the Preferred Alternative; once type and

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extent of contamination and details of construction are known, potential risk and exposure can be assessed and appropriate documentation in place.

The Project meets air quality standards; therefore, public alerts regarding emissions will not be required.

Response to Comment 5:
No impacts to public health are anticipated. For more information, please refer to **Chapter VI.**

The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

COMMENTS	RESPONSES
	FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future. **Response to Comment 6:** To minimize risk to the public, FRA requires a range of measures, including emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA). Emergency access/egress for pedestrians would be accomplished via emergency exits no farther than 2,500 feet apart or cross-passages between tunnels every 800 feet or less, or in some situations, a combination of both. For the Preferred Alternative, three locations would be provided for emergency egress to the surface, working with cross-passages in the tunnels. The emergency egress to ground level would be provided at the south portal Ventilation Facility, via the Intermediate Ventilation Facility, and at the north portal Ventilation Facility. The ventilation facilities would be an essential Life/Safety component of the build alternatives, beyond their function of providing emergency access/egress for the tunnels. The ventilation facilities would include an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, and silencers and dampers. In the unlikely event of a fire, smoke could emerge from the vents, as is the case with any structural fire. The ventilation facilities and fans are built so that smoke emerging from the Tunnel would be projected up and away from the community. **Response to Comment 7:** The Project has been planned mostly underground in order to avoid greater impacts to the community. Fire in a tunnel is much less damaging to a community than an above-ground track running through the neighborhood The new B&P Tunnel will be designed to be better equipped and prepared than the current B&P Tunnel. In terms of structural integrity, all of the proposed Project infrastructure will be designed, constructed, and maintained using proven modern design and safety standards. The

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Project will be designed in accordance with applicable regulations, oversight agency guidance, and knowledge of safety standards to ensure optimal safety.

In the very rare event of a tunnel fire, the path from a tunnel fire to the exhaust louvers is long and circuitous, with many bends that reduce the ability of particles to travel through the fans and louvers.

Response to Comment 8:
In the event of an emergency, local first responders will alert the community. Evacuation routes, if needed, would be established following an event. Evacuation routes cannot be established prior to knowledge of the location of the event.

Response to Comment 9:
As stated above, the Project meets air quality standards; therefore, public alerts regarding emissions will not be required.

Response to Comment 10:
For the past several years, only one local freight train (Norfolk Southern) has been operating through the B&P Tunnel daily, serving customers south of the B&P Tunnel between Baltimore and Washington, DC. Currently, cargos to/from specific railroad customers of the freight trains that pass through the B&P Tunnel include vegetable oil, plastic pellets, paper, lumber, and produce. However, there are no regulations or restrictions which would preclude other forms of freight cargo on these trains, providing the material is moved in accordance with federal transportation rules.

As stated above, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

The Project was initiated because the B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

Representatives from Maryland Department of Transportation (MDOT) and the Federal Railroad Administration were present at various meetings on 10/15/2014, 05/20/2015, 06/17/2015, 04/20/2016, and 06/17/2015, respectively. MDOT tracks the movement of freight within the State and works with the local jurisdictions to ensure that plans are in placed in the event of an accident involving freight trains.

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	The Northeast Corridor (NEC) faces serious challenges to meet current and projected travel demand. Responding to these pressing issues, the FRA initiated the NEC FUTURE Environmental Impact Statement as a comprehensive planning process for future investment in the corridor. The NEC FUTURE identified the B&P Tunnel as one of the segments along the NEC that faces capacity constraints and reliability challenges due to multiple chokepoints and state-of-good-repair needs. Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains. **Response to Comment 11**: As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)). Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative. **Response to Comment 12:** As described above, currently, cargo to/from specific railroad customers of the freight trains that pass through the B&P Tunnel include vegetable oil, plastic pellets, paper, lumber, and produce. However, there are no regulations or restrictions which would preclude other forms of freight cargo on these trains, providing the material is moved in

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accordance with federal transportation rules. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Response to Comment 13:
It is not clear what disaster events are being referenced. It is not possible to project the number of incidents in the tunnel. Potential incidents would be less likely due to the updated design and modern construction of the tunnel.

Response to Comment 14:
The requested psychological study is beyond the scope of the National Environmental Policy Act.

The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Response to Comment 15:
Please refer to the comment above.

Response to Comment 16:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of Transportation's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing

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transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

The B&P Project Team has performed an Environmental Justice (EJ) analysis consistent with EO 12898 and subsequent USDOT Orders. A critical component of the EO on environmental justice is public outreach. The Project Team has engaged extensively with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held with local officials; public, local, and regional organizations; government agencies; and representatives of affected EJ communities along the evaluated alternative alignment. Three Public Open Houses, as well as ten community meetings, have been held where the public was given the opportunity to learn about the project development in-person, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings. Additionally, the Project Team attended meetings at the request of the following organizations: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter's Clavier Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School.

Direct mailings to residents in the Study Area included property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The Project website continues to post meeting notices, Project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship, and other organizations.

The Project Team studied community composition in the areas affected by the build alternatives. It reviewed data from the American Community Survey 2009-2013 for minority and low-income populations, the National Center for Educational Statistics, government-assisted housing programs, historical references, city officials, field visits, and community meetings. From this information, the Project Team learned that of the 77 Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS.

Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations. For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in

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the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings.

As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be underground which would reduce the overall impact to the communities. The Project sponsor will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project sponsor will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

Response to Comment 17:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

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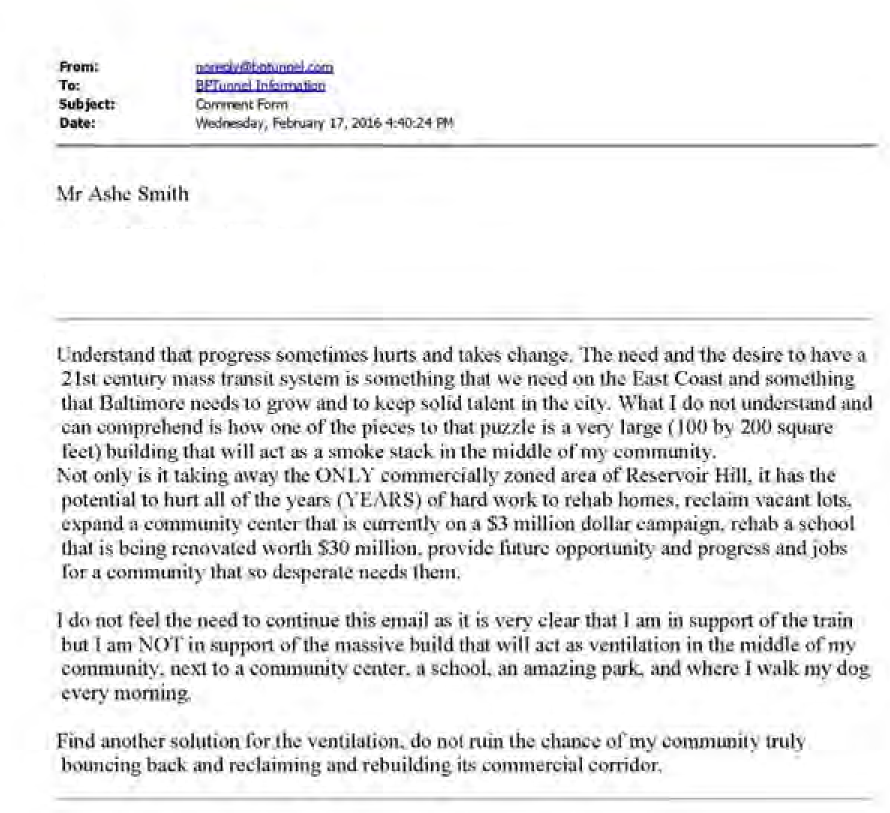
DEIS Comment 86:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Wednesday, February 17, 2016 4:40:24 PM

Mr Ashe Smith

1 Understand that progress sometimes hurts and takes change. The need and the desire to have a 21st century mass transit system is something that we need on the East Coast and something that Baltimore needs to grow and to keep solid talent in the city. What I do not understand and can comprehend is how one of the pieces to that puzzle is a very large (100 by 200 square feet) building that will act as a smoke stack in the middle of my community.
Not only is it taking away the ONLY commercially zoned area of Reservoir Hill, it has the potential to hurt all of the years (YEARS) of hard work to rehab homes, reclaim vacant lots, expand a community center that is currently on a $3 million dollar campaign, rehab a school that is being renovated worth $30 million, provide future opportunity and progress and jobs for a community that so desperate needs them.

I do not feel the need to continue this email as it is very clear that I am in support of the train but I am NOT in support of the massive build that will act as ventilation in the middle of my community, next to a community center, a school, an amazing park, and where I walk my dog every morning.

Find another solution for the ventilation, do not ruin the chance of my community truly bouncing back and reclaiming and rebuilding its commercial corridor.

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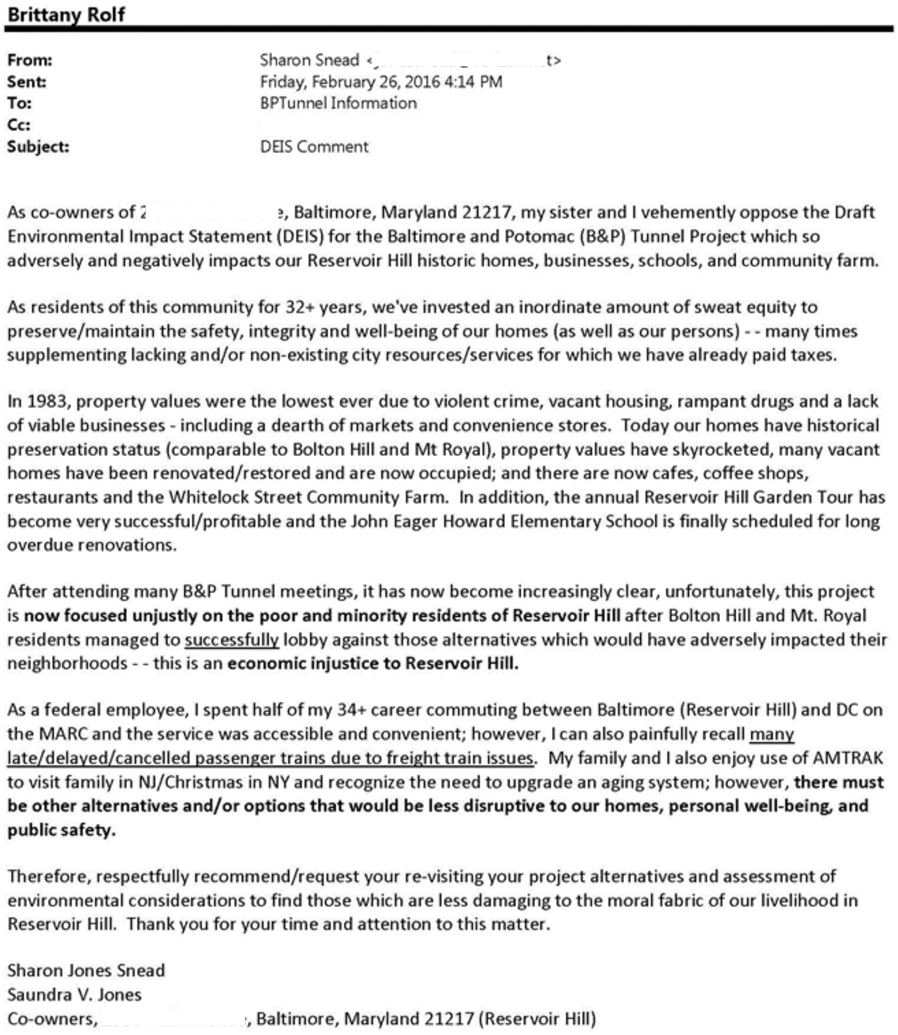
Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

DEIS Comment 87:



Brittany Rolf

From: Sharon Snead <[redacted]t>
Sent: Friday, February 26, 2016 4:14 PM
To: BPTunnel Information
Cc:
Subject: DEIS Comment

As co-owners of [redacted], Baltimore, Maryland 21217, my sister and I vehemently oppose the Draft Environmental Impact Statement (DEIS) for the Baltimore and Potomac (B&P) Tunnel Project which so adversely and negatively impacts our Reservoir Hill historic homes, businesses, schools, and community farm.

As residents of this community for 32+ years, we've invested an inordinate amount of sweat equity to preserve/maintain the safety, integrity and well-being of our homes (as well as our persons) - - many times supplementing lacking and/or non-existing city resources/services for which we have already paid taxes.

In 1983, property values were the lowest ever due to violent crime, vacant housing, rampant drugs and a lack of viable businesses - including a dearth of markets and convenience stores. Today our homes have historical preservation status (comparable to Bolton Hill and Mt Royal), property values have skyrocketed, many vacant homes have been renovated/restored and are now occupied; and there are now cafes, coffee shops, restaurants and the Whitelock Street Community Farm. In addition, the annual Reservoir Hill Garden Tour has become very successful/profitable and the John Eager Howard Elementary School is finally scheduled for long overdue renovations.

1 After attending many B&P Tunnel meetings, it has now become increasingly clear, unfortunately, this project is **now focused unjustly on the poor and minority residents of Reservoir Hill** after Bolton Hill and Mt. Royal residents managed to successfully lobby against those alternatives which would have adversely impacted their neighborhoods - - this is an **economic injustice to Reservoir Hill.**

2 As a federal employee, I spent half of my 34+ career commuting between Baltimore (Reservoir Hill) and DC on the MARC and the service was accessible and convenient; however, I can also painfully recall many late/delayed/cancelled passenger trains due to freight train issues. My family and I also enjoy use of AMTRAK to visit family in NJ/Christmas in NY and recognize the need to upgrade an aging system; however, **there must be other alternatives and/or options that would be less disruptive to our homes, personal well-being, and public safety.**

Therefore, respectfully recommend/request your re-visiting your project alternatives and assessment of environmental considerations to find those which are less damaging to the moral fabric of our livelihood in Reservoir Hill. Thank you for your time and attention to this matter.

Sharon Jones Snead
Saundra V. Jones
Co-owners, [redacted], Baltimore, Maryland 21217 (Reservoir Hill)

RESPONSES

Response to Comment 1:
The existing B&P Tunnel tracks are in Bolton Hill. Options as to where the new B&P Tunnel should reside are limited. Due to the geography and the shallowness of the area beneath Bolton Hill, this area was not a feasible option for the proposed tunnel, whereas the area underneath Reservoir Hill is deeper and more practicable.

Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of Transportation's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

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COMMENTS	RESPONSES

populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS.

Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations. For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings.

As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be underground which would reduce the overall impact to the communities. The Project sponsor will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project sponsor will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

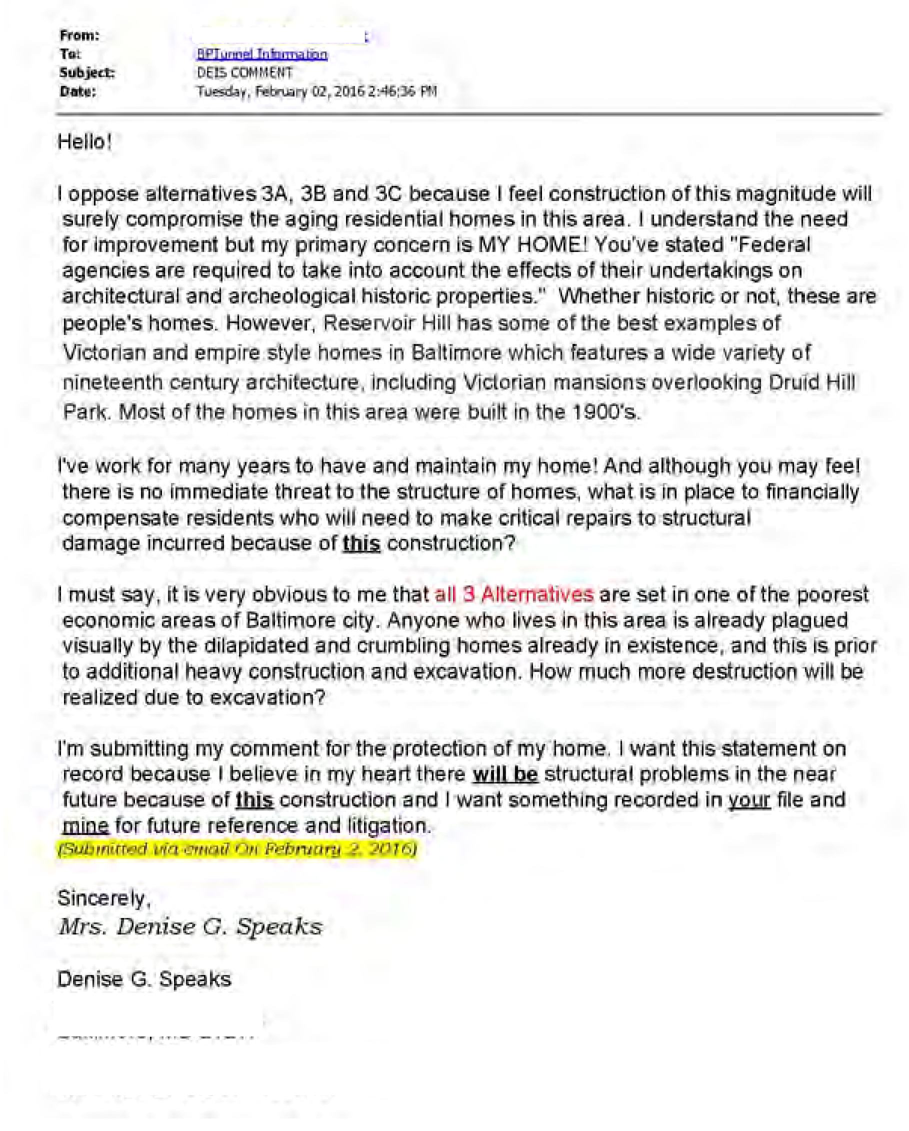
Response to Comment 2:
Consistent with Northeast Corridor (NEC) long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

Amtrak’s first priority is to its passenger services. Therefore, although Amtrak must accommodate requests from NS or other freight operators with trackage rights agreements for additional train moves on the NEC, Amtrak need only schedule such moves as space

COMMENTS	RESPONSES
	between passenger trains can be made available. Where the freight operator and Amtrak have a dispute about scheduling of freight moves, the Surface Transportation Board (STB) adjudicates trackage rights agreements. As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)). Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

COMMENTS

DEIS Comment 88:



From: [redacted]
To: BPTunnel Information
Subject: DEIS COMMENT
Date: Tuesday, February 02, 2016 2:46:36 PM

Hello!

I oppose alternatives 3A, 3B and 3C because I feel construction of this magnitude will surely compromise the aging residential homes in this area. I understand the need for improvement but my primary concern is MY HOME! You've stated "Federal agencies are required to take into account the effects of their undertakings on architectural and archeological historic properties." Whether historic or not, these are people's homes. However, Reservoir Hill has some of the best examples of Victorian and empire style homes in Baltimore which features a wide variety of nineteenth century architecture, including Victorian mansions overlooking Druid Hill Park. Most of the homes in this area were built in the 1900's.

1 I've work for many years to have and maintain my home! And although you may feel there is no immediate threat to the structure of homes, what is in place to financially compensate residents who will need to make critical repairs to structural damage incurred because of **this** construction?

2 I must say, it is very obvious to me that all 3 Alternatives are set in one of the poorest economic areas of Baltimore city. Anyone who lives in this area is already plagued visually by the dilapidated and crumbling homes already in existence, and this is prior to additional heavy construction and excavation. How much more destruction will be realized due to excavation?

I'm submitting my comment for the protection of my home. I want this statement on record because I believe in my heart there **will be** structural problems in the near future because of **this** construction and I want something recorded in your file and mine for future reference and litigation.
(Submitted via email On February 2, 2016)

Sincerely,
Mrs. Denise G. Speaks

Denise G. Speaks

[redacted]

RESPONSES

Response to Comment 1:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

Response to Comment 2:
The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM

COMMENTS

RESPONSES

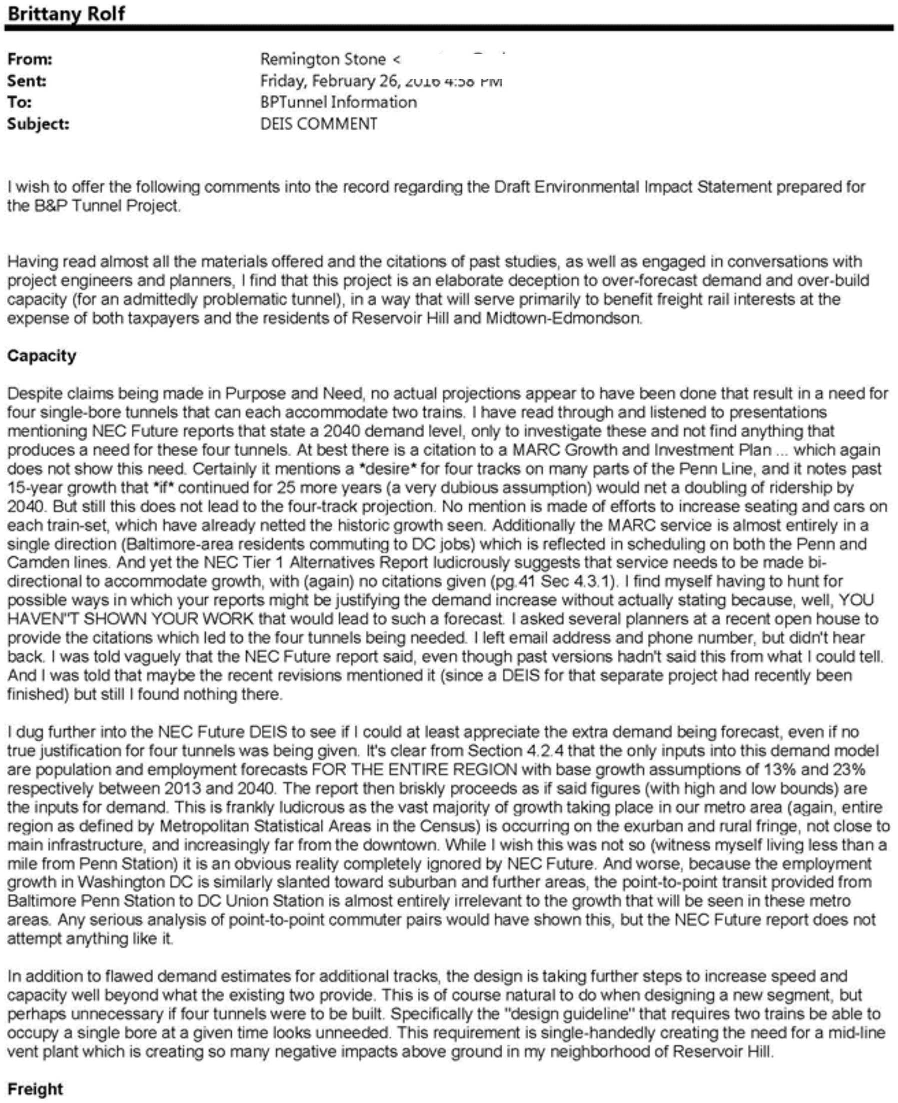
would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

COMMENTS

DEIS Comment 89:



Brittany Rolf

From:	Remington Stone < [redacted]
Sent:	Friday, February 26, 2016 4:38 PM
To:	BPTunnel Information
Subject:	DEIS COMMENT

I wish to offer the following comments into the record regarding the Draft Environmental Impact Statement prepared for the B&P Tunnel Project.

Having read almost all the materials offered and the citations of past studies, as well as engaged in conversations with project engineers and planners, I find that this project is an elaborate deception to over-forecast demand and over-build capacity (for an admittedly problematic tunnel), in a way that will serve primarily to benefit freight rail interests at the expense of both taxpayers and the residents of Reservoir Hill and Midtown-Edmondson.

Capacity

1 Despite claims being made in Purpose and Need, no actual projections appear to have been done that result in a need for four single-bore tunnels that can each accommodate two trains. I have read through and listened to presentations mentioning NEC Future reports that state a 2040 demand level, only to investigate these and not find anything that produces a need for these four tunnels. At best there is a citation to a MARC Growth and Investment Plan ... which again does not show this need. Certainly it mentions a *desire* for four tracks on many parts of the Penn Line, and it notes past 15-year growth that *if* continued for 25 more years (a very dubious assumption) would net a doubling of ridership by 2040. But still this does not lead to the four-track projection. No mention is made of efforts to increase seating and cars on each train-set, which have already netted the historic growth seen. Additionally the MARC service is almost entirely in a single direction (Baltimore-area residents commuting to DC jobs) which is reflected in scheduling on both the Penn and Camden lines. And yet the NEC Tier 1 Alternatives Report ludicrously suggests that service needs to be made bi-directional to accommodate growth, with (again) no citations given (pg.41 Sec 4.3.1). I find myself having to hunt for possible ways in which your reports might be justifying the demand increase without actually stating because, well, YOU HAVEN"T SHOWN YOUR WORK that would lead to such a forecast. I asked several planners at a recent open house to provide the citations which led to the four tunnels being needed. I left email address and phone number, but didn't hear back. I was told vaguely that the NEC Future report said, even though past versions hadn't said this from what I could tell. And I was told that maybe the recent revisions mentioned it (since a DEIS for that separate project had recently been finished) but still I found nothing there.

I dug further into the NEC Future DEIS to see if I could at least appreciate the extra demand being forecast, even if no true justification for four tunnels was being given. It's clear from Section 4.2.4 that the only inputs into this demand model are population and employment forecasts FOR THE ENTIRE REGION with base growth assumptions of 13% and 23% respectively between 2013 and 2040. The report then briskly proceeds as if said figures (with high and low bounds) are the inputs for demand. This is frankly ludicrous as the vast majority of growth taking place in our metro area (again, entire region as defined by Metropolitan Statistical Areas in the Census) is occurring on the exurban and rural fringe, not close to main infrastructure, and increasingly far from the downtown. While I wish this was not so (witness myself living less than a mile from Penn Station) it is an obvious reality completely ignored by NEC Future. And worse, because the employment growth in Washington DC is similarly slanted toward suburban and further areas, the point-to-point transit provided from Baltimore Penn Station to DC Union Station is almost entirely irrelevant to the growth that will be seen in these metro areas. Any serious analysis of point-to-point commuter pairs would have shown this, but the NEC Future report does not attempt anything like it.

In addition to flawed demand estimates for additional tracks, the design is taking further steps to increase speed and capacity well beyond what the existing two provide. This is of course natural to do when designing a new segment, but perhaps unnecessary if four tunnels were to be built. Specifically the "design guideline" that requires two trains be able to occupy a single bore at a given time looks unneeded. This requirement is single-handedly creating the need for a mid-line vent plant which is creating so many negative impacts above ground in my neighborhood of Reservoir Hill.

Freight

RESPONSES

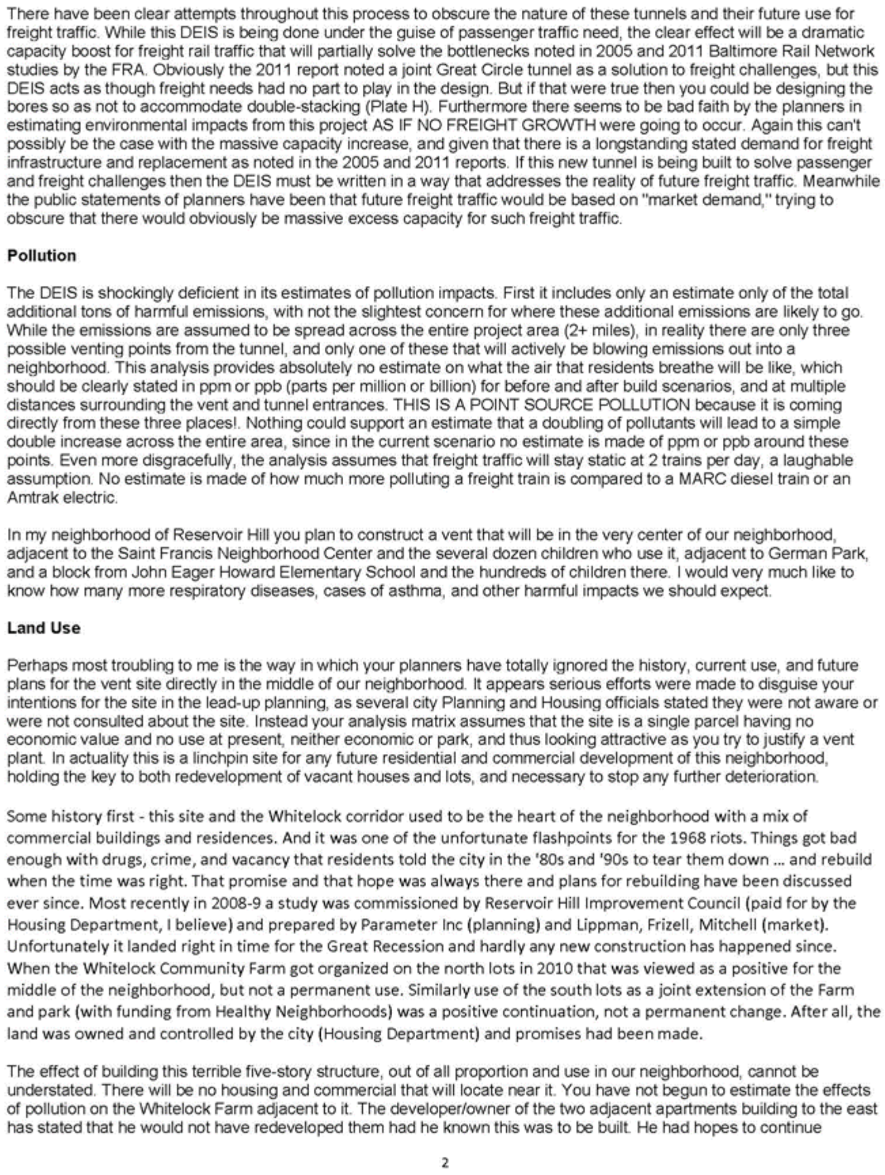
Response to Comment 1:

The Northeast Corridor (NEC) faces serious challenges to meet current and projected travel demand. Responding to these pressing issues, the FRA initiated the NEC FUTURE Environmental Impact Statement as a comprehensive planning process for future investment in the corridor. The NEC FUTURE identified the B&P Tunnel as one of the segments along the NEC that faces capacity constraints and reliability challenges due to multiple chokepoints and state-of-good-repair needs.

Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

Response to Comment 2:

COMMENTS



2 There have been clear attempts throughout this process to obscure the nature of these tunnels and their future use for freight traffic. While this DEIS is being done under the guise of passenger traffic need, the clear effect will be a dramatic capacity boost for freight rail traffic that will partially solve the bottlenecks noted in 2005 and 2011 Baltimore Rail Network studies by the FRA. Obviously the 2011 report noted a joint Great Circle tunnel as a solution to freight challenges, but this DEIS acts as though freight needs had no part to play in the design. But if that were true then you could be designing the bores so as not to accommodate double-stacking (Plate H). Furthermore there seems to be bad faith by the planners in estimating environmental impacts from this project AS IF NO FREIGHT GROWTH were going to occur. Again this can't possibly be the case with the massive capacity increase, and given that there is a longstanding stated demand for freight infrastructure and replacement as noted in the 2005 and 2011 reports. If this new tunnel is being built to solve passenger and freight challenges then the DEIS must be written in a way that addresses the reality of future freight traffic. Meanwhile the public statements of planners have been that future freight traffic would be based on "market demand," trying to obscure that there would obviously be massive excess capacity for such freight traffic.

Pollution

3 The DEIS is shockingly deficient in its estimates of pollution impacts. First it includes only an estimate only of the total additional tons of harmful emissions, with not the slightest concern for where these additional emissions are likely to go. While the emissions are assumed to be spread across the entire project area (2+ miles), in reality there are only three possible venting points from the tunnel, and only one of these that will actively be blowing emissions out into a neighborhood. This analysis provides absolutely no estimate on what the air that residents breathe will be like, which should be clearly stated in ppm or ppb (parts per million or billion) for before and after build scenarios, and at multiple distances surrounding the vent and tunnel entrances. THIS IS A POINT SOURCE POLLUTION because it is coming directly from these three places!. Nothing could support an estimate that a doubling of pollutants will lead to a simple double increase across the entire area, since in the current scenario no estimate is made of ppm or ppb around these points. Even more disgracefully, the analysis assumes that freight traffic will stay static at 2 trains per day, a laughable assumption. No estimate is made of how much more polluting a freight train is compared to a MARC diesel train or an Amtrak electric.

In my neighborhood of Reservoir Hill you plan to construct a vent that will be in the very center of our neighborhood, adjacent to the Saint Francis Neighborhood Center and the several dozen children who use it, adjacent to German Park, and a block from John Eager Howard Elementary School and the hundreds of children there. I would very much like to know how many more respiratory diseases, cases of asthma, and other harmful impacts we should expect.

Land Use

4 Perhaps most troubling to me is the way in which your planners have totally ignored the history, current use, and future plans for the vent site directly in the middle of our neighborhood. It appears serious efforts were made to disguise your intentions for the site in the lead-up planning, as several city Planning and Housing officials stated they were not aware or were not consulted about the site. Instead your analysis matrix assumes that the site is a single parcel having no economic value and no use at present, neither economic or park, and thus looking attractive as you try to justify a vent plant. In actuality this is a linchpin site for any future residential and commercial development of this neighborhood, holding the key to both redevelopment of vacant houses and lots, and necessary to stop any further deterioration.

Some history first - this site and the Whitelock corridor used to be the heart of the neighborhood with a mix of commercial buildings and residences. And it was one of the unfortunate flashpoints for the 1968 riots. Things got bad enough with drugs, crime, and vacancy that residents told the city in the '80s and '90s to tear them down … and rebuild when the time was right. That promise and that hope was always there and plans for rebuilding have been discussed ever since. Most recently in 2008-9 a study was commissioned by Reservoir Hill Improvement Council (paid for by the Housing Department, I believe) and prepared by Parameter Inc (planning) and Lippman, Frizell, Mitchell (market). Unfortunately it landed right in time for the Great Recession and hardly any new construction has happened since. When the Whitelock Community Farm got organized on the north lots in 2010 that was viewed as a positive for the middle of the neighborhood, but not a permanent use. Similarly use of the south lots as a joint extension of the Farm and park (with funding from Healthy Neighborhoods) was a positive continuation, not a permanent change. After all, the land was owned and controlled by the city (Housing Department) and promises had been made.

The effect of building this terrible five-story structure, out of all proportion and use in our neighborhood, cannot be understated. There will be no housing and commercial that will locate near it. You have not begun to estimate the effects of pollution on the Whitelock Farm adjacent to it. The developer/owner of the two adjacent apartments building to the east has stated that he would not have redeveloped them had he known this was to be built. He had hopes to continue

RESPONSES

The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

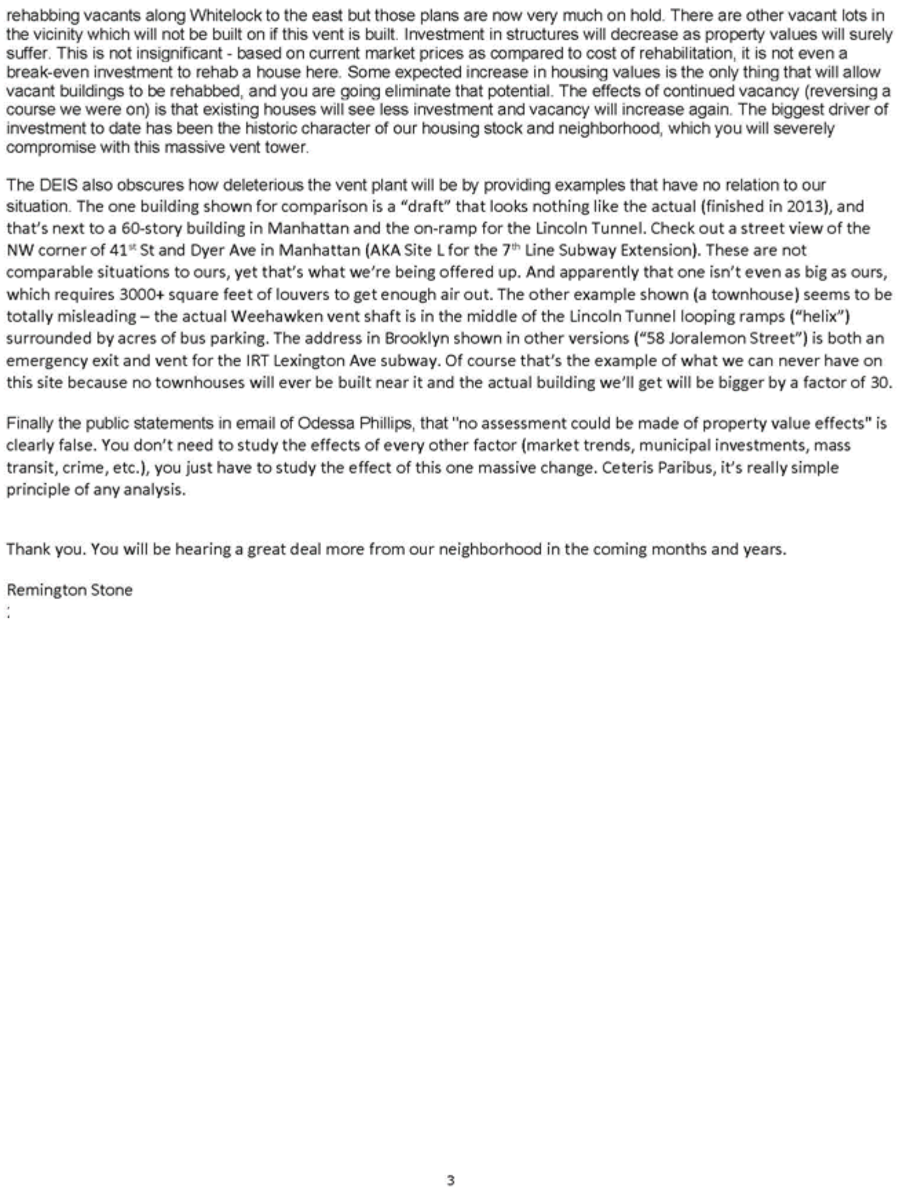
Amtrak design practices require new NEC infrastructure meet current standards, including Plate H (double stack) clearances. However, the new tunnel could not be used by double stack freight trains unless certain factors are met. These factors include:

- Substantial improvements, such as extensive additional vertical clearance improvements north and south of the B&P Tunnel to other NEC infrastructure; these improvements are not being designed as part of the B&P Project;
- Federal, state, local and regional support for aforementioned improvements including funding and policy;
- Increasing the bridge and catenary clearance on the NEC where double stack/high dimension trains are to travel;
- Construction of new or modified Union tunnel to Plate H/K (double stack) clearances; without a high dimension Union tunnel, double stack freight service using the B&P Tunnel is not possible;
- NS currently favors the Harrisburg-Perryville route for intermodal service;
- Freight schedules limited to off peak/night time periods which affects the scheduling flexibility and transit time for high priority (Intermodal) shipments for which time is absolutely critical; and
- Construction of track connection/s between the CSX and the NEC if CSX chooses to use the NEC.

In the short-term, there is no indication of any significant increase in freight movements through the B&P Tunnel.

Response to Comment 3:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2

COMMENTS



rehabbing vacants along Whitelock to the east but those plans are now very much on hold. There are other vacant lots in the vicinity which will not be built on if this vent is built. Investment in structures will decrease as property values will surely suffer. This is not insignificant - based on current market prices as compared to cost of rehabilitation, it is not even a break-even investment to rehab a house here. Some expected increase in housing values is the only thing that will allow vacant buildings to be rehabbed, and you are going eliminate that potential. The effects of continued vacancy (reversing a course we were on) is that existing houses will see less investment and vacancy will increase again. The biggest driver of investment to date has been the historic character of our housing stock and neighborhood, which you will severely compromise with this massive vent tower.

The DEIS also obscures how deleterious the vent plant will be by providing examples that have no relation to our situation. The one building shown for comparison is a "draft" that looks nothing like the actual (finished in 2013), and that's next to a 60-story building in Manhattan and the on-ramp for the Lincoln Tunnel. Check out a street view of the NW corner of 41st St and Dyer Ave in Manhattan (AKA Site L for the 7th Line Subway Extension). These are not comparable situations to ours, yet that's what we're being offered up. And apparently that one isn't even as big as ours, which requires 3000+ square feet of louvers to get enough air out. The other example shown (a townhouse) seems to be totally misleading – the actual Weehawken vent shaft is in the middle of the Lincoln Tunnel looping ramps ("helix") surrounded by acres of bus parking. The address in Brooklyn shown in other versions ("58 Joralemon Street") is both an emergency exit and vent for the IRT Lexington Ave subway. Of course that's the example of what we can never have on this site because no townhouses will ever be built near it and the actual building we'll get will be bigger by a factor of 30.

5 Finally the public statements in email of Odessa Phillips, that "no assessment could be made of property value effects" is clearly false. You don't need to study the effects of every other factor (market trends, municipal investments, mass transit, crime, etc.), you just have to study the effect of this one massive change. Ceteris Paribus, it's really simple principle of any analysis.

Thank you. You will be hearing a great deal more from our neighborhood in the coming months and years.

Remington Stone

3

RESPONSES

concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

In response to your concern regarding air pollution near the school, Children's Health was assessed for Air Quality, Water, Soil and Hazardous Material and is described in **Chapter VI** of this FEIS. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

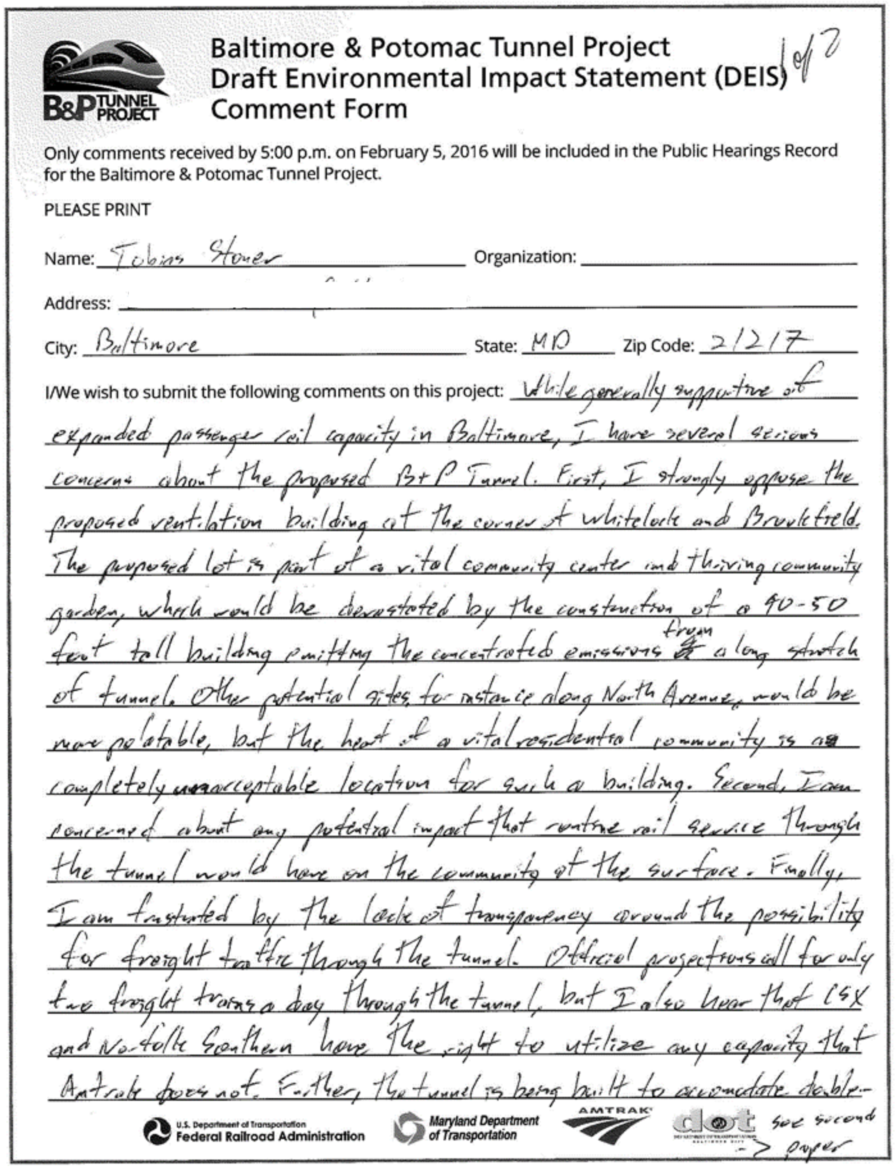
Response to Comment 4:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 5:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS

DEIS Comment 90:



Baltimore & Potomac Tunnel Project Draft Environmental Impact Statement (DEIS) Comment Form

1 of 2

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Tobias Stoner Organization:

Address:

City: Baltimore State: MD Zip Code: 21217

I/We wish to submit the following comments on this project: While generally supportive of
expanded passenger rail capacity in Baltimore, I have several serious
concerns about the proposed B+P Tunnel. First, I strongly oppose the
1 proposed ventilation building at the corner of Whitelock and Brookfield.
The proposed lot is part of a vital community center and thriving community
garden, which would be devastated by the construction of a 40-50
2 foot tall building emitting the concentrated emissions ~~of~~ from a long stretch
of tunnel. Other potential sites, for instance along North Avenue, would be
more palatable, but the heart of a vital residential community is a
completely unacceptable location for such a building. Second, I am
3 concerned about any potential impact that routine rail service through
the tunnel would have on the community at the surface. Finally,
I am frustrated by the lack of transparency around the possibility
4 for freight traffic through the tunnel. Official projections call for only
two freight trains a day through the tunnel, but I also hear that CSX
and Norfolk Southern have the right to utilize any capacity that
Amtrak does not. Further, the tunnel is being built to accomodate double-

U.S. Department of Transportation Federal Railroad Administration

Maryland Department of Transportation

AMTRAK

dot

see second → paper

RESPONSES

Response to Comment 1:

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 2:

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

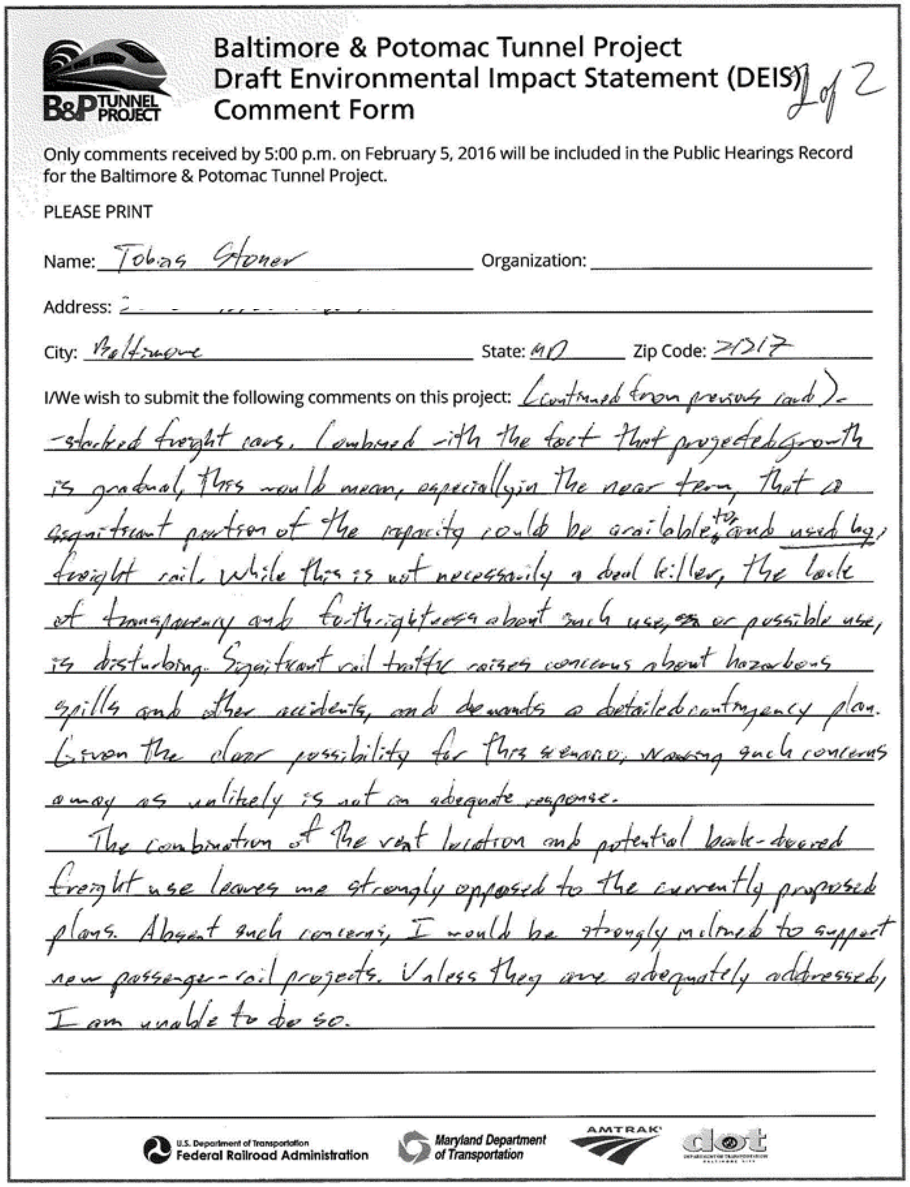
Response to Comment 3:

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be

COMMENTS



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS) 2 of 2
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Tobias Stoner Organization:

Address:

City: Baltimore State: MD Zip Code: 21217

I/We wish to submit the following comments on this project: (continued from previous card) -
-stacked freight cars. Combined with the fact that projected growth
is gradual, this would mean, especially in the near term, that a
significant portion of the capacity could be available to and used by,
5 freight rail. While this is not necessarily a deal killer, the lack
of transparency and forthrightness about such use, or possible use,
is disturbing. Significant rail traffic raises concerns about hazardous
spills and other accidents, and demands a detailed contingency plan.
6 Given the clear possibility for this scenario, waving such concerns
away as unlikely is not an adequate response.
The combination of the vent location and potential back-doored
freight use leaves me strongly opposed to the currently proposed
plans. Absent such concerns, I would be strongly inclined to support
new passenger-rail projects. Unless they are adequately addressed,
I am unable to do so.

U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK

RESPONSES

felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

Response to Comment 4:

The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes.

COMMENTS

RESPONSES

Response to Comment 5:
Amtrak design practices require new NEC infrastructure meet current standards, including Plate H (double stack) clearances. However, the new tunnel could not be used by double stack freight trains unless certain factors are met. These factors include:

- Substantial improvements, such as extensive additional vertical clearance improvements north and south of the B&P Tunnel to other NEC infrastructure; these improvements are not being designed as part of the B&P Project;
- Federal, state, local and regional support for aforementioned improvements including funding and policy;
- Increasing the bridge and catenary clearance on the NEC where double stack/high dimension trains are to travel;
- Construction of new or modified Union tunnel to Plate H/K (double stack) clearances; without a high dimension Union tunnel, double stack freight service using the B&P Tunnel is not possible;
- NS currently favors the Harrisburg-Perryville route for intermodal service;
- Freight schedules limited to off peak/night time periods which affects the scheduling flexibility and transit time for high priority (Intermodal) shipments for which time is absolutely critical; and
- Construction of track connection/s between the CSX and the NEC if CSX chooses to use the NEC.

In the short-term, there is no indication of any significant increase in freight movements through the B&P Tunnel.

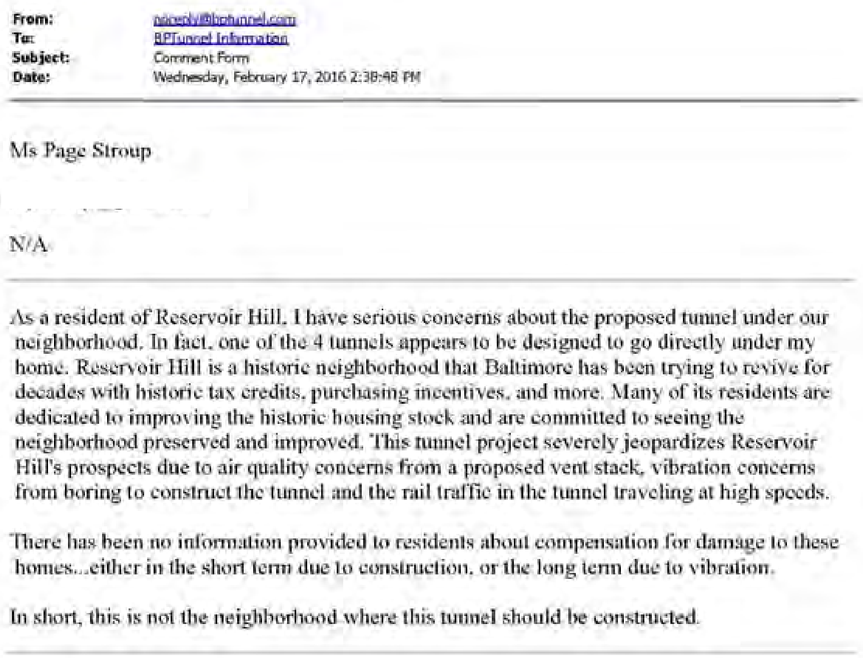
Response to Comment 6:
NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

COMMENTS	RESPONSES
	FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection. The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

COMMENTS

DEIS Comment 91:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Wednesday, February 17, 2016 2:38:48 PM

Ms Page Stroup

[redacted]

N/A

1 As a resident of Reservoir Hill, I have serious concerns about the proposed tunnel under our neighborhood. In fact, one of the 4 tunnels appears to be designed to go directly under my home. Reservoir Hill is a historic neighborhood that Baltimore has been trying to revive for decades with historic tax credits, purchasing incentives, and more. Many of its residents are dedicated to improving the historic housing stock and are committed to seeing the neighborhood preserved and improved. This tunnel project severely jeopardizes Reservoir Hill's prospects due to air quality concerns from a proposed vent stack, vibration concerns from boring to construct the tunnel and the rail traffic in the tunnel traveling at high speeds.

2 There has been no information provided to residents about compensation for damage to these homes...either in the short term due to construction, or the long term due to vibration.

In short, this is not the neighborhood where this tunnel should be constructed.

RESPONSES

Response to Comment 1:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the

COMMENTS

RESPONSES

surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

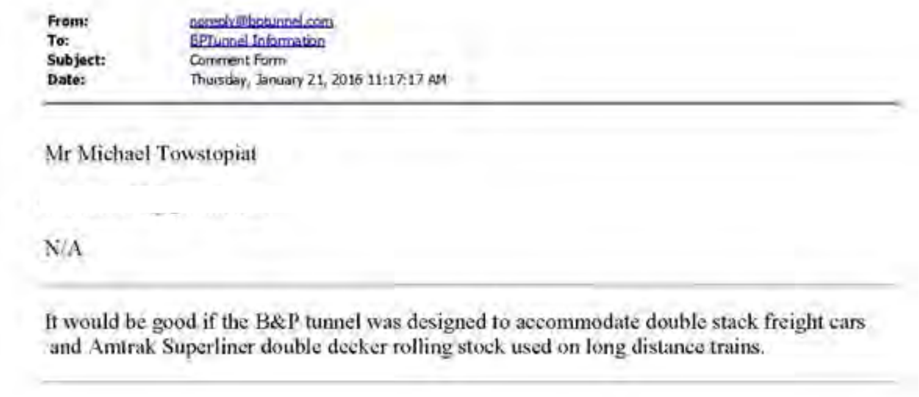
All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

The tunnel will be equipped with Automatic Train Control (ATC) and Positive Train Control (PTC) systems, which use computer systems to control the speed of trains within the tunnel.

Response to Comment 2:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be fully compensated for the cost of repairs.

COMMENTS

DEIS Comment 92:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Thursday, January 21, 2016 11:17:17 AM

Mr Michael Towstopiat

N/A

1 It would be good if the B&P tunnel was designed to accommodate double stack freight cars and Amtrak Superliner double decker rolling stock used on long distance trains.

RESPONSES

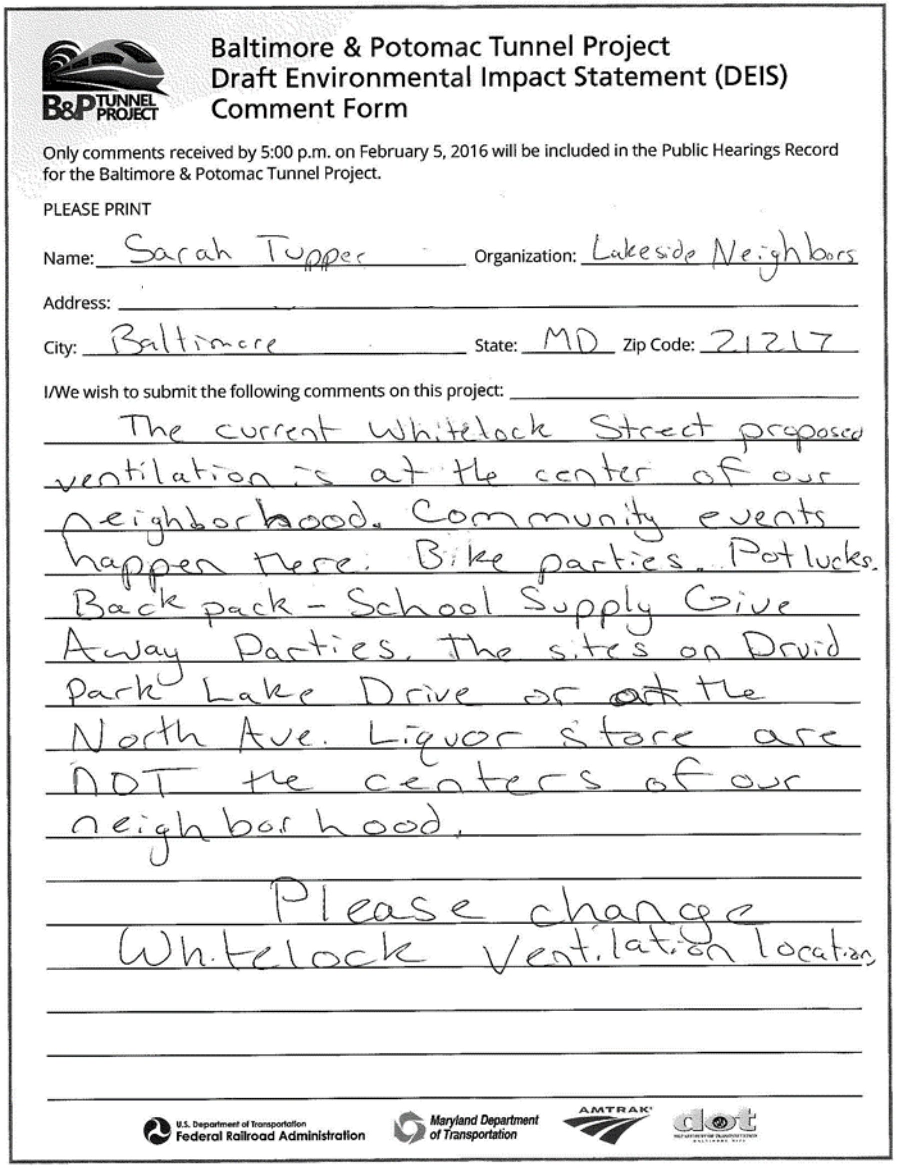
Response to Comment 1:
Amtrak design practices require new NEC infrastructure meet current standards, including Plate H (double stack) clearances. However, the new tunnel could not be used by double stack freight trains unless certain factors are met. These factors include:

- Substantial improvements, such as extensive additional vertical clearance improvements north and south of the B&P Tunnel to other NEC infrastructure; these improvements are not being designed as part of the B&P Project;
- Federal, state, local and regional support for aforementioned improvements including funding and policy;
- Increasing the bridge and catenary clearance on the NEC where double stack/high dimension trains are to travel;
- Construction of new or modified Union tunnel to Plate H/K (double stack) clearances; without a high dimension Union tunnel, double stack freight service using the B&P Tunnel is not possible;
- NS currently favors the Harrisburg-Perryville route for intermodal service;
- Freight schedules limited to off peak/night time periods which affects the scheduling flexibility and transit time for high priority (Intermodal) shipments for which time is absolutely critical; and
- Construction of track connection/s between the CSX and the NEC if CSX chooses to use the NEC.

In the short-term, there is no indication of any significant increase in freight movements through the B&P Tunnel.

COMMENTS

DEIS Comment 93:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Sarah Tupper Organization: Lakeside Neighbors
Address:
City: Baltimore State: MD Zip Code: 21217

I/We wish to submit the following comments on this project:

1 The current Whitelock Street proposed ventilation is at the center of our neighborhood. Community events happen there: Bike parties, Potlucks, Back pack - School Supply Give Away Parties. The sites on Druid Park Lake Drive or ~~at~~ the North Ave. Liquor store are NOT the centers of our neighborhood.

Please change Whitelock Ventilation location

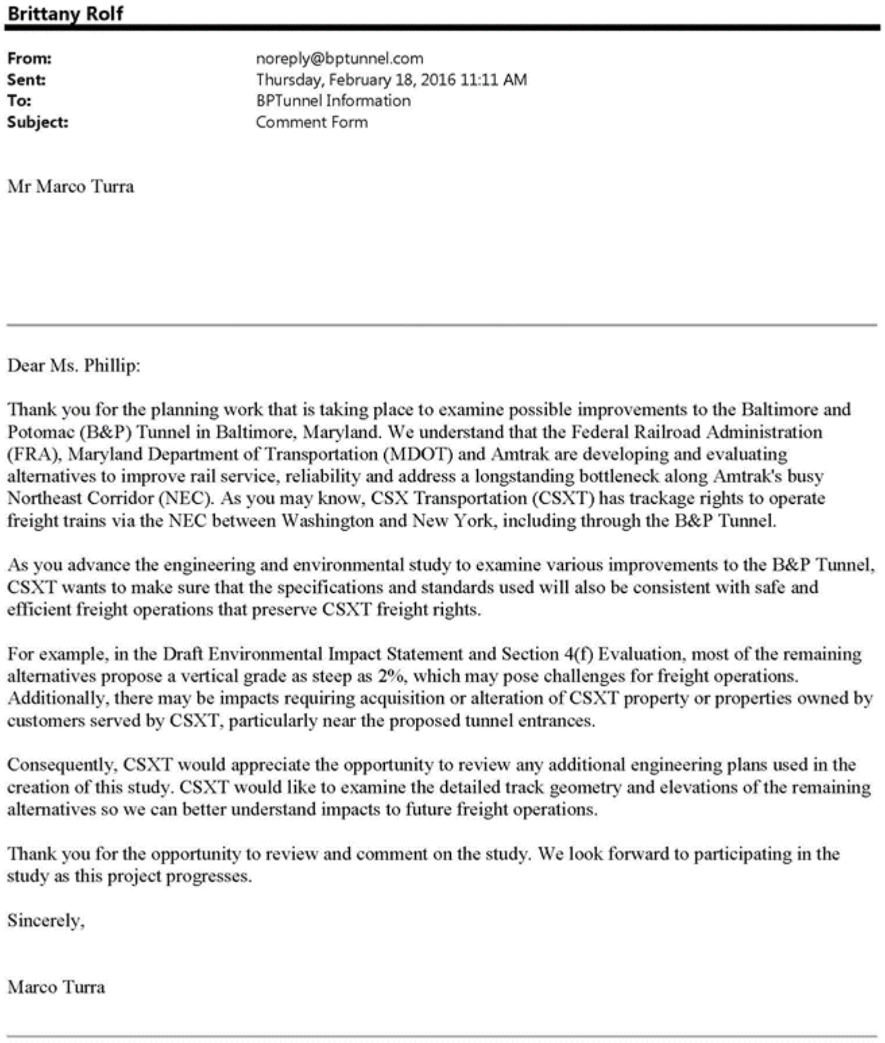
U.S. Department of Transportation Federal Railroad Administration · Maryland Department of Transportation · AMTRAK

RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

DEIS Comment 94:



Brittany Rolf

From: noreply@bptunnel.com
Sent: Thursday, February 18, 2016 11:11 AM
To: BPTunnel Information
Subject: Comment Form

Mr Marco Turra

Dear Ms. Phillip:

Thank you for the planning work that is taking place to examine possible improvements to the Baltimore and Potomac (B&P) Tunnel in Baltimore, Maryland. We understand that the Federal Railroad Administration (FRA), Maryland Department of Transportation (MDOT) and Amtrak are developing and evaluating alternatives to improve rail service, reliability and address a longstanding bottleneck along Amtrak's busy Northeast Corridor (NEC). As you may know, CSX Transportation (CSXT) has trackage rights to operate freight trains via the NEC between Washington and New York, including through the B&P Tunnel.

1 As you advance the engineering and environmental study to examine various improvements to the B&P Tunnel, CSXT wants to make sure that the specifications and standards used will also be consistent with safe and efficient freight operations that preserve CSXT freight rights.

For example, in the Draft Environmental Impact Statement and Section 4(f) Evaluation, most of the remaining alternatives propose a vertical grade as steep as 2%, which may pose challenges for freight operations. Additionally, there may be impacts requiring acquisition or alteration of CSXT property or properties owned by customers served by CSXT, particularly near the proposed tunnel entrances.

Consequently, CSXT would appreciate the opportunity to review any additional engineering plans used in the creation of this study. CSXT would like to examine the detailed track geometry and elevations of the remaining alternatives so we can better understand impacts to future freight operations.

Thank you for the opportunity to review and comment on the study. We look forward to participating in the study as this project progresses.

Sincerely,

Marco Turra

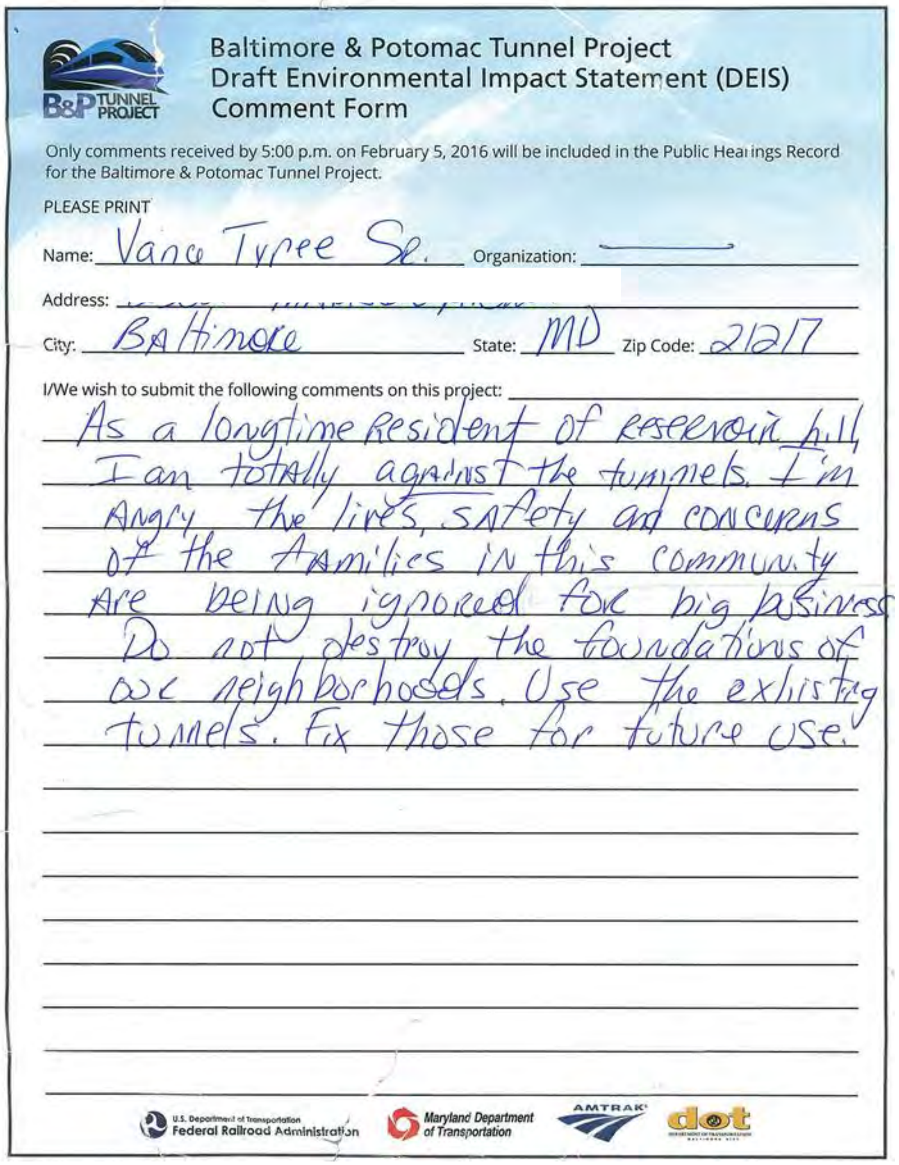
RESPONSES

Response to Comment 1:

Design development and environmental evaluation were based on refined design goals that considered existing and future NEC operations, the Baltimore Penn Station Master Plan, and input from agencies and the public. Design criteria are detailed in **Chapter III.**

COMMENTS

DEIS Comment 95:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

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PLEASE PRINT

Name: Vance Tyree Sr. Organization: ———

Address: [redacted]

City: Baltimore State: MD Zip Code: 21217

I/We wish to submit the following comments on this project:

1 As a longtime Resident of reservoir hill I am totally against the tunnels. I'm Angry the lives, safety and concerns of the families in this community Are being ignored for big business Do not destroy the foundations of our neighborhoods.

2 Use the existing tunnels. Fix those for future use.

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Maryland Department of Transportation
AMTRAK
dot

RESPONSES

Response to Comment 1:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

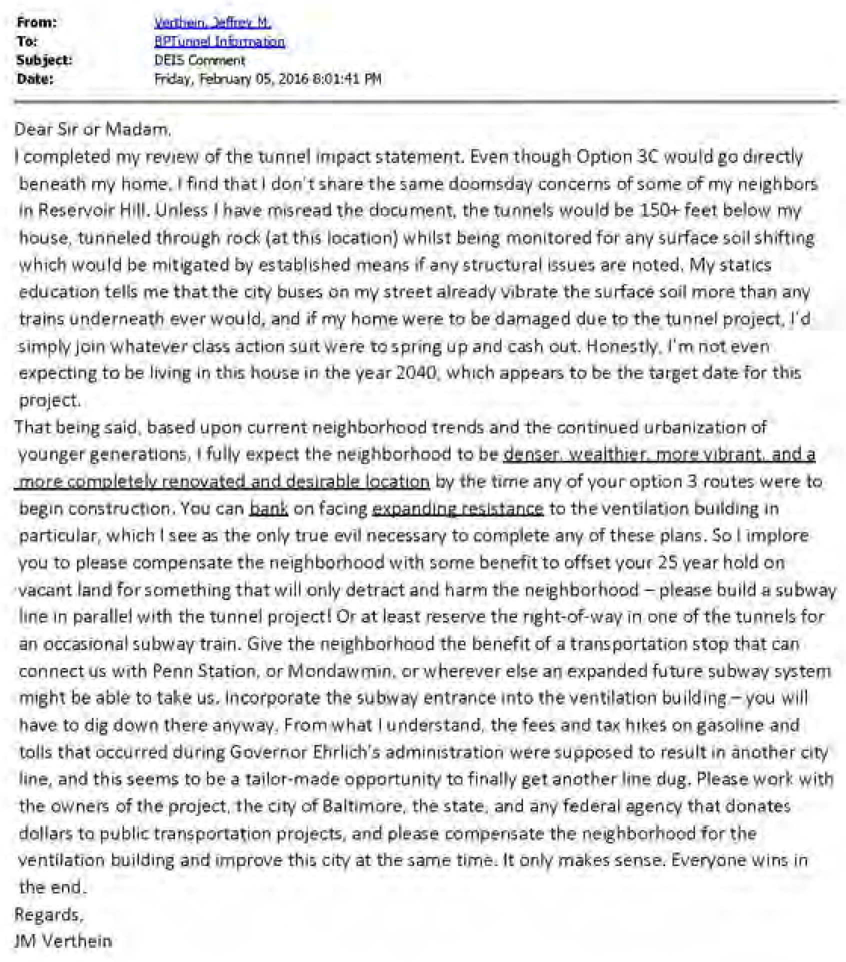
Response to Comment 2:
As described in **Chapter III** of the FEIS, Alternative 2: Reconstruct/Modernize Existing Tunnel was eliminated from further consideration for specific engineering and operational reasons. Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including:

- Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction;
- No parking along Wilson Street or Winchester Street during construction;
- Limitations for residential and commercial access along Wilson Street and Winchester Street during construction;
- Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park;
- Substantial residential property impacts; and
- Severe impacts to North Avenue, central Light Rail line, and CSX Main Line operations due to open cut construction through North Avenue, light rail, and CSX track beds.

Additionally, for construction to advance, at minimum, one track would have to be removed from service. It would be impossible to provide adequate NEC service using a single track, particularly as ridership and train frequency increase over time.

COMMENTS

DEIS Comment 96:



From: Verthein, Jeffrey M.
To: BPTunnel Information
Subject: DEIS Comment
Date: Friday, February 05, 2016 8:01:41 PM

Dear Sir or Madam,

I completed my review of the tunnel impact statement. Even though Option 3C would go directly
beneath my home, I find that I don't share the same doomsday concerns of some of my neighbors
in Reservoir Hill. Unless I have misread the document, the tunnels would be 150+ feet below my
1 house, tunneled through rock (at this location) whilst being monitored for any surface soil shifting
which would be mitigated by established means if any structural issues are noted. My statics
education tells me that the city buses on my street already vibrate the surface soil more than any
2 trains underneath ever would, and if my home were to be damaged due to the tunnel project, I'd
simply join whatever class action suit were to spring up and cash out. Honestly, I'm not even
expecting to be living in this house in the year 2040, which appears to be the target date for this
project.

That being said, based upon current neighborhood trends and the continued urbanization of
younger generations, I fully expect the neighborhood to be denser, wealthier, more vibrant, and a
more completely renovated and desirable location by the time any of your option 3 routes were to
3 begin construction. You can bank on facing expanding resistance to the ventilation building in
particular, which I see as the only true evil necessary to complete any of these plans. So I implore
you to please compensate the neighborhood with some benefit to offset your 25 year hold on
vacant land for something that will only detract and harm the neighborhood – please build a subway
4 line in parallel with the tunnel project! Or at least reserve the right-of-way in one of the tunnels for
an occasional subway train. Give the neighborhood the benefit of a transportation stop that can
connect us with Penn Station, or Mondawmin, or wherever else an expanded future subway system
might be able to take us. Incorporate the subway entrance into the ventilation building – you will
have to dig down there anyway. From what I understand, the fees and tax hikes on gasoline and
tolls that occurred during Governor Ehrlich's administration were supposed to result in another city
line, and this seems to be a tailor-made opportunity to finally get another line dug. Please work with
the owners of the project, the city of Baltimore, the state, and any federal agency that donates
dollars to public transportation projects, and please compensate the neighborhood for the
ventilation building and improve this city at the same time. It only makes sense. Everyone wins in
the end.

Regards,
JM Verthein

RESPONSES

Response to Comment 1:
The build alternatives will have an average tunnel depth of 115 feet.

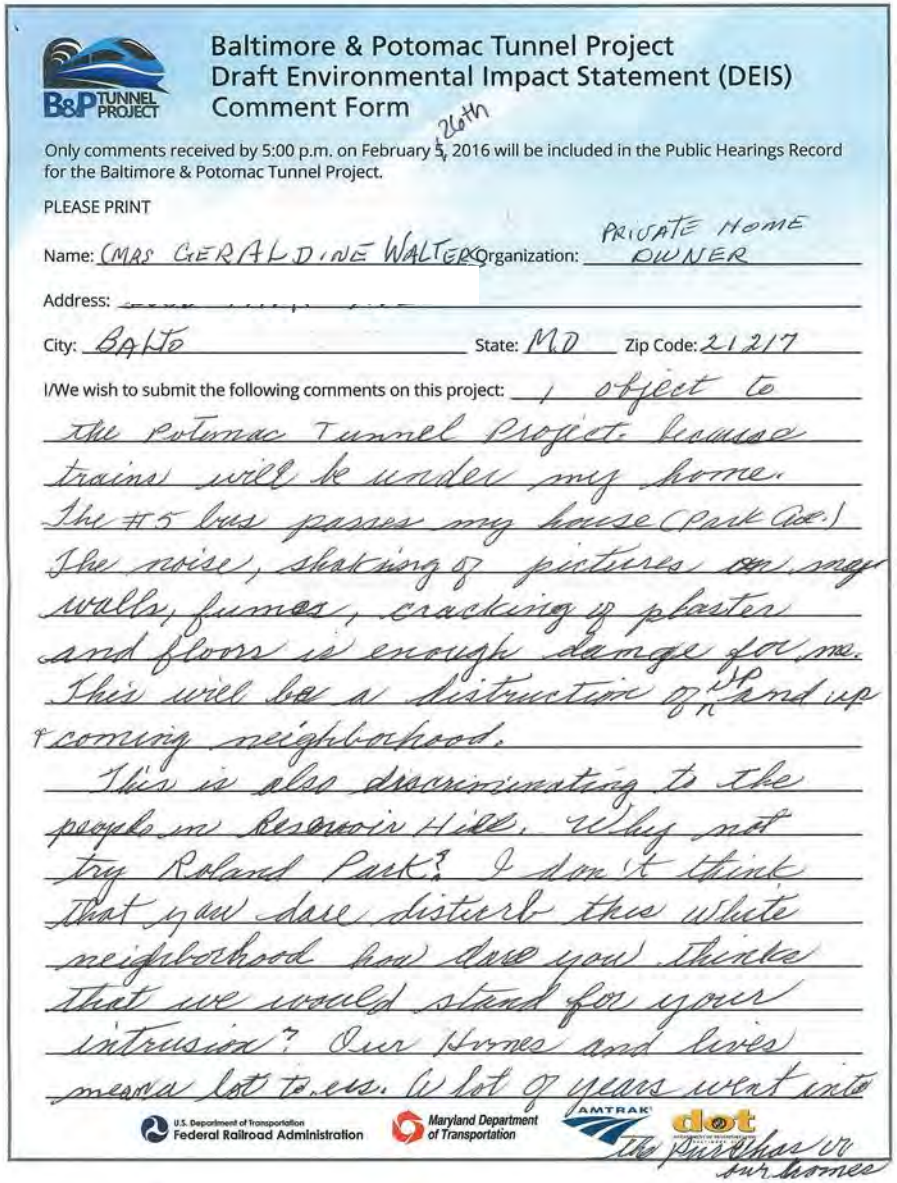
Response to Comment 2:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be fully compensated for the cost of repairs.

Response to Comment 3:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 4:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

DEIS Comment 97:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February ~~5~~ 26th, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: (MRS GERALDINE WALTERS Organization: PRIVATE HOME OWNER

Address: [redacted]

City: BALTO State: MD Zip Code: 21217

I/We wish to submit the following comments on this project: I object to
the Potomac Tunnel Project because
trains will be under my home.
The #5 bus passes my house (Park Ave.)
1 The noise, shaking of pictures on my
walls, fumes, cracking of plaster
and floors is enough damage for me.
This will be a distruction of up and up
& coming neighborhood.
This is also discriminating to the
people in Reservoir Hill. Why not
3 try Roland Park? I don't think
that you dare disturb this white
neighborhood how dare you think
that we would stand for your
intrusion? Our Homes and lives
mean a lot to us. A lot of years went into
the purchas or our homes

U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK
dot

RESPONSES

Response to Comment 1:

The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

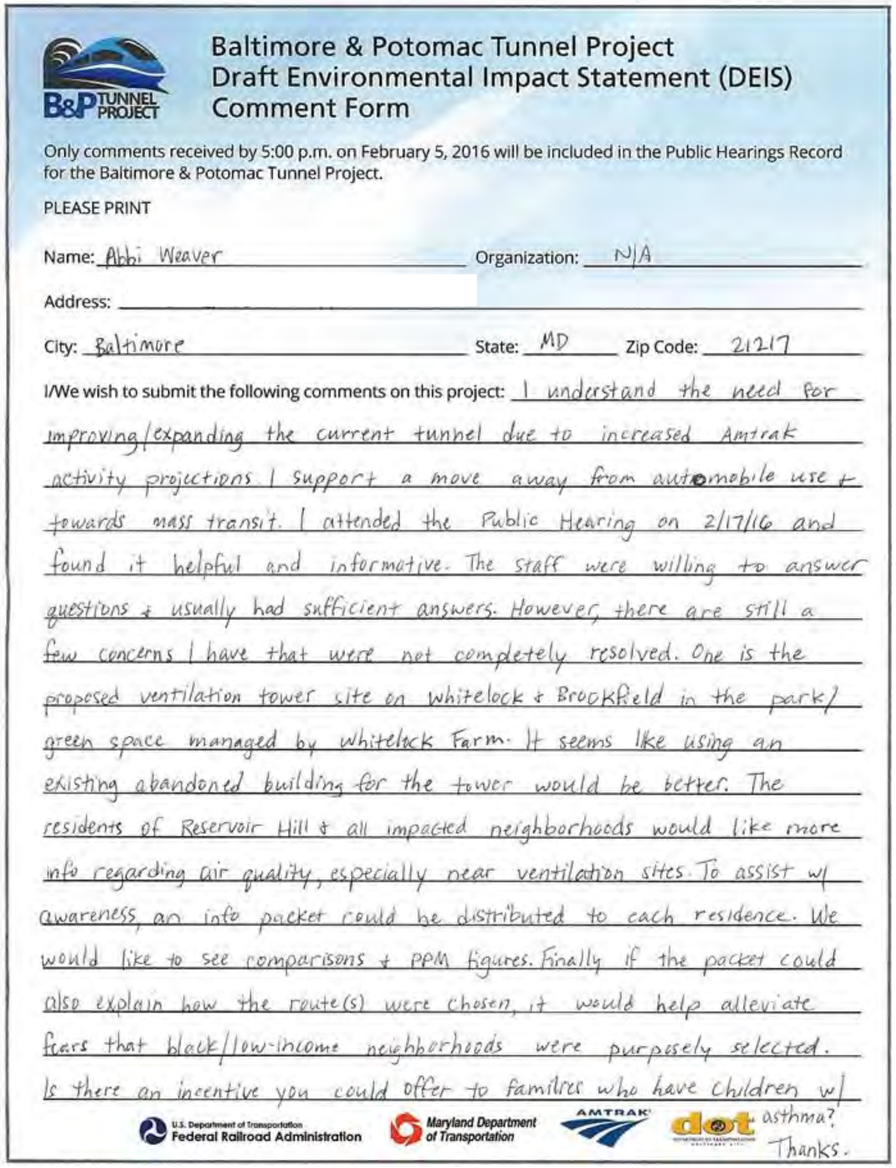
Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am and 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am, and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are in **Chapter VI**.

COMMENTS	RESPONSES
	Response to Comment 3: Siting the Tunnel in Roland Park would not take advantage of existing infrastructure, including Baltimore Penn Station or the Gwynns Falls Bridge, which was a necessary condition for an alternative to be retained. The existing B&P Tunnel tracks are in Bolton Hill. Options as to where the new B&P Tunnel should reside are limited. Due to the geography and the shallowness of the area beneath Bolton Hill, this area was not a feasible option for the proposed tunnel, whereas the area underneath Reservoir Hill is deeper and more practicable. The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

COMMENTS

DEIS Comment 98:



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Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Abbi Weaver Organization: N/A

Address: [redacted]

City: Baltimore State: MD Zip Code: 21217

I/We wish to submit the following comments on this project: I understand the need for
improving/expanding the current tunnel due to increased Amtrak
activity projections I support a move away from automobile use &
towards mass transit. I attended the Public Hearing on 2/17/16 and
found it helpful and informative. The staff were willing to answer
1 questions & usually had sufficient answers. However, there are still a
few concerns I have that were not completely resolved. One is the
proposed ventilation tower site on Whitelock & Brookfield in the park/
green space managed by Whitelock Farm. It seems like using an
existing abandoned building for the tower would be better. The
2 residents of Reservoir Hill & all impacted neighborhoods would like more
info regarding air quality, especially near ventilation sites. To assist w/
awareness, an info packet could be distributed to each residence. We
would like to see comparisons & PPM figures. Finally if the packet could
3 also explain how the route(s) were chosen, it would help alleviate
4 fears that black/low-income neighborhoods were purposely selected.
5 Is there an incentive you could offer to families who have children w/
asthma?
Thanks.

U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK
dot

RESPONSES

Response to Comment 1:

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 2:

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation plant air dispersion modeling.

Analysis of ventilation plant emissions included an air dispersion modeling analysis, which followed the latest US Environmental Protection Agency modeling guidelines for predicting air quality effects for regulated pollutants. The results of the analysis were compared to the stringent 1-hour NO_2 National Ambient Air Quality Standards (NAAQS) of 100 parts per billion (ppb) as opposed to the annual standard of 53 ppb. Emission studies have demonstrated that if NO_2 concentrations are maintained within acceptable levels, then other pollutant concentrations associated with diesel exhaust emissions will also be within acceptable limits. The maximum predicted 1-hour NO_2 concentration from the three ventilation facilities as well as north and south portals was 12.8 ppb. When added to the NO_2 background concentration of 51 ppb, the total predicted 1-hour concentration amounted to 63.8 ppb, which is below the NAAQS of 100 ppb. The maximum predicted 1-hour NO_2 concentration of the intermediate ventilation plant is 2.9 ppb and when combined with NO_2 background concentration of 51 ppb the total NO_2 concentration would be 53.9 ppb, below the NAAQS threshold limits of 100 ppb.

Response to Comment 3:

As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The

COMMENTS	RESPONSES

14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

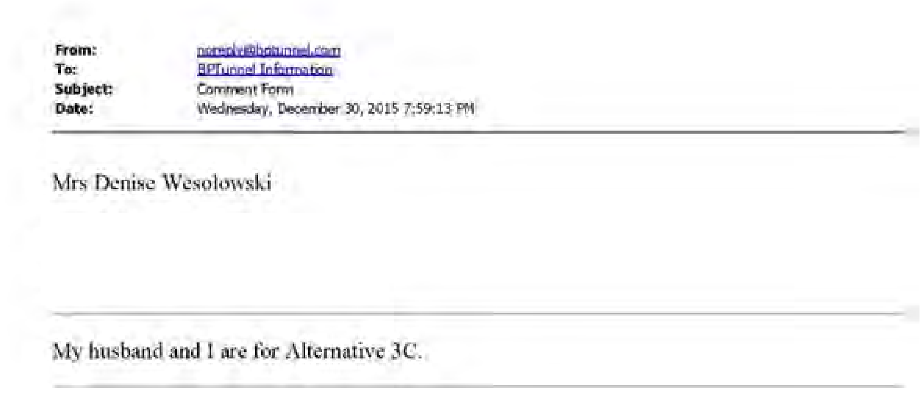
Response to Comment 4:
The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

Response to Comment 5:
In regards to your concern for the health of children, Children's Health was assessed for Air Quality, Water, Soil and Hazardous Material and is described in **Chapter VI** of this FEIS. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of $NO_{x,}$ VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss Project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

DEIS Comment 99:



From: noreply@bptunnel.com
To: BPTunnel Information
Subject: Comment Form
Date: Wednesday, December 30, 2015 7:59:13 PM

Mrs Denise Wesolowski

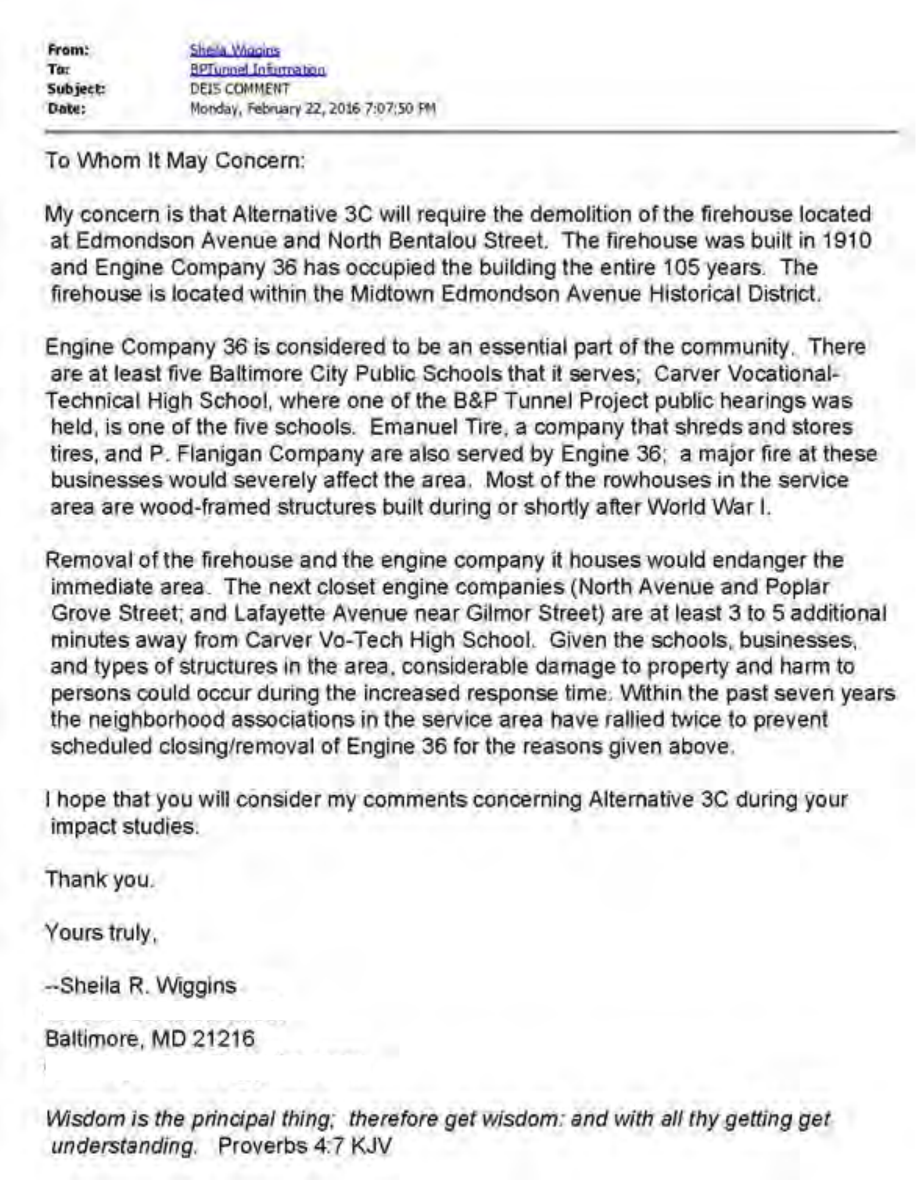
1 My husband and I are for Alternative 3C.

RESPONSES

Response to Comment 1:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 100:



From: Sheila Wiggins
To: BPTunnel Information
Subject: DEIS COMMENT
Date: Monday, February 22, 2016 7:07:50 PM

To Whom It May Concern:

1 My concern is that Alternative 3C will require the demolition of the firehouse located at Edmondson Avenue and North Bentalou Street. The firehouse was built in 1910 and Engine Company 36 has occupied the building the entire 105 years. The firehouse is located within the Midtown Edmondson Avenue Historical District.

Engine Company 36 is considered to be an essential part of the community. There are at least five Baltimore City Public Schools that it serves; Carver Vocational-Technical High School, where one of the B&P Tunnel Project public hearings was held, is one of the five schools. Emanuel Tire, a company that shreds and stores tires, and P. Flanigan Company are also served by Engine 36; a major fire at these businesses would severely affect the area. Most of the rowhouses in the service area are wood-framed structures built during or shortly after World War I.

Removal of the firehouse and the engine company it houses would endanger the immediate area. The next closet engine companies (North Avenue and Poplar Grove Street; and Lafayette Avenue near Gilmor Street) are at least 3 to 5 additional minutes away from Carver Vo-Tech High School. Given the schools, businesses, and types of structures in the area, considerable damage to property and harm to persons could occur during the increased response time. Within the past seven years the neighborhood associations in the service area have rallied twice to prevent scheduled closing/removal of Engine 36 for the reasons given above.

I hope that you will consider my comments concerning Alternative 3C during your impact studies.

Thank you.

Yours truly,

--Sheila R. Wiggins

Baltimore, MD 21216

Wisdom is the principal thing; therefore get wisdom: and with all thy getting get understanding. Proverbs 4:7 KJV

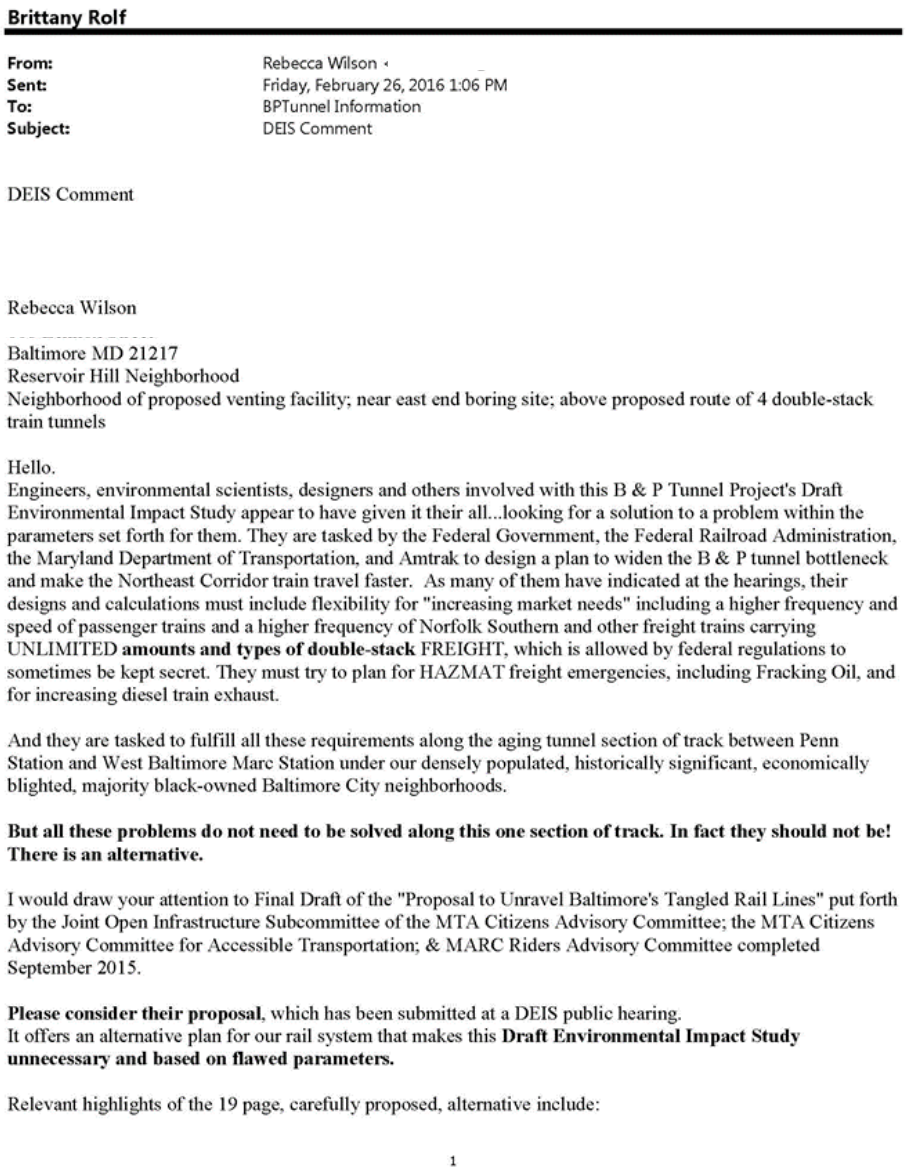
RESPONSES

Response to Comment 1:
The Preferred Alternative, as well as build alternative 3A, would have no impact on Engine Company 36. Under alternative 3C there would be substantial impacts to the firehouse.

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 101:



Brittany Rolf

From: Rebecca Wilson ‹
Sent: Friday, February 26, 2016 1:06 PM
To: BPTunnel Information
Subject: DEIS Comment

DEIS Comment

Rebecca Wilson
Baltimore MD 21217
Reservoir Hill Neighborhood
Neighborhood of proposed venting facility; near east end boring site; above proposed route of 4 double-stack train tunnels

Hello.
Engineers, environmental scientists, designers and others involved with this B & P Tunnel Project's Draft
Environmental Impact Study appear to have given it their all...looking for a solution to a problem within the
parameters set forth for them. They are tasked by the Federal Government, the Federal Railroad Administration,
the Maryland Department of Transportation, and Amtrak to design a plan to widen the B & P tunnel bottleneck
1 and make the Northeast Corridor train travel faster. As many of them have indicated at the hearings, their
designs and calculations must include flexibility for "increasing market needs" including a higher frequency and
2 speed of passenger trains and a higher frequency of Norfolk Southern and other freight trains carrying
UNLIMITED **amounts and types of double-stack** FREIGHT, which is allowed by federal regulations to
sometimes be kept secret. They must try to plan for HAZMAT freight emergencies, including Fracking Oil, and
for increasing diesel train exhaust.

And they are tasked to fulfill all these requirements along the aging tunnel section of track between Penn Station and West Baltimore Marc Station under our densely populated, historically significant, economically blighted, majority black-owned Baltimore City neighborhoods.

3 **But all these problems do not need to be solved along this one section of track. In fact they should not be! There is an alternative.**

I would draw your attention to Final Draft of the "Proposal to Unravel Baltimore's Tangled Rail Lines" put forth by the Joint Open Infrastructure Subcommittee of the MTA Citizens Advisory Committee; the MTA Citizens Advisory Committee for Accessible Transportation; & MARC Riders Advisory Committee completed September 2015.

Please consider their proposal, which has been submitted at a DEIS public hearing.
It offers an alternative plan for our rail system that makes this **Draft Environmental Impact Study unnecessary and based on flawed parameters.**

Relevant highlights of the 19 page, carefully proposed, alternative include:

1

RESPONSES

Response to Comment 1:
While Project goals include addressing the bottleneck and improving travel time, the Project Need articulates that the existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

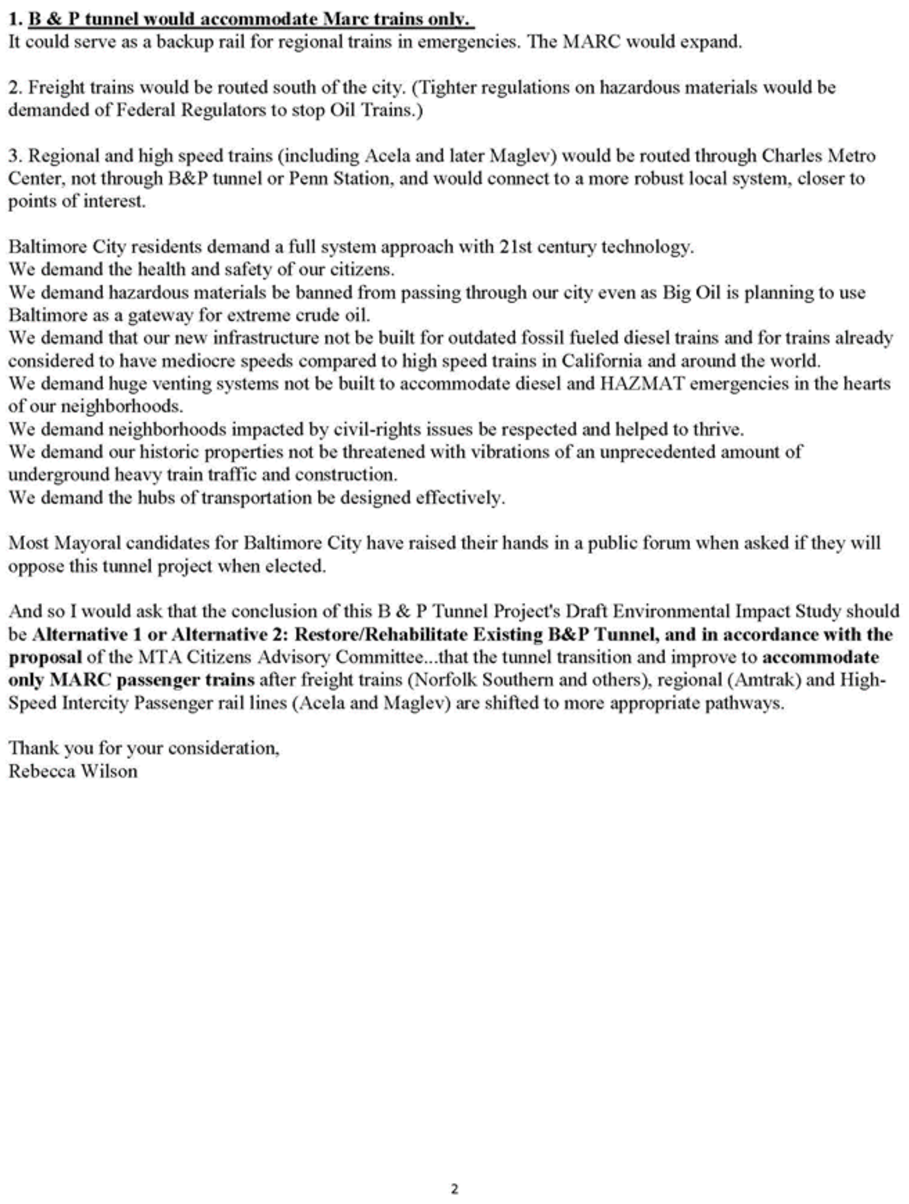
Response to Comment 2:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes.

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum,*

COMMENTS



3 1. **B & P tunnel would accommodate Marc trains only.**
It could serve as a backup rail for regional trains in emergencies. The MARC would expand.

2. Freight trains would be routed south of the city. (Tighter regulations on hazardous materials would be demanded of Federal Regulators to stop Oil Trains.)

3. Regional and high speed trains (including Acela and later Maglev) would be routed through Charles Metro Center, not through B&P tunnel or Penn Station, and would connect to a more robust local system, closer to points of interest.

Baltimore City residents demand a full system approach with 21st century technology.
We demand the health and safety of our citizens.
We demand hazardous materials be banned from passing through our city even as Big Oil is planning to use Baltimore as a gateway for extreme crude oil.
We demand that our new infrastructure not be built for outdated fossil fueled diesel trains and for trains already considered to have mediocre speeds compared to high speed trains in California and around the world.
4 We demand huge venting systems not be built to accommodate diesel and HAZMAT emergencies in the hearts of our neighborhoods.
5 We demand neighborhoods impacted by civil-rights issues be respected and helped to thrive.
6 We demand our historic properties not be threatened with vibrations of an unprecedented amount of underground heavy train traffic and construction.
We demand the hubs of transportation be designed effectively.

Most Mayoral candidates for Baltimore City have raised their hands in a public forum when asked if they will oppose this tunnel project when elected.

7 And so I would ask that the conclusion of this B & P Tunnel Project's Draft Environmental Impact Study should be **Alternative 1 or Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and in accordance with the proposal** of the MTA Citizens Advisory Committee...that the tunnel transition and improve to **accommodate only MARC passenger trains** after freight trains (Norfolk Southern and others), regional (Amtrak) and High-Speed Intercity Passenger rail lines (Acela and Maglev) are shifted to more appropriate pathways.

Thank you for your consideration,
Rebecca Wilson

RESPONSES

> *chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Response to Comment 3:
The report referenced, *A Proposal to Unravel Baltimore's Tangled Rail Lines*, argues for a comprehensive system approach to rail planning in Baltimore and the mid-Atlantic region. It describes a list of projects and the order in which they should be completed. The report takes into consideration local, state, and regional transportation routes, and recommends new construction at a number of locations in order to relieve congestion and create opportunities for expanding rail service in the future.

While recommendations in the report focus on resolving issues at a regional level, they would not address or resolve the specific needs of the B&P Tunnel; therefore, the improvements suggested in the report would be beyond the purview of the Project. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life. It is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. For additional information regarding The Purpose and Need for the Project, please see **Chapter II** of this FEIS. To review the September 2015 report in its entirety, please refer to **DEIS Comment #11.**

Response to Comment 4:
As described in **Chapter III** of the FEIS, the build alternatives would require three ventilation facilities in order to meet current safety industry standards (NFPA 130) for projected NEC FUTURE train demand headway, and to ensure proper ventilation of the proposed tunnels. The purpose of the ventilation facility is to pull fresh air into the tunnel and ventilate the tunnel air to the outside. One ventilation facility will be located at the south portal, and another will be located 300-600 feet from the north portal. A third ventilation facility would be located at street level, connected to the bored portion of the tunnels by a vertical shaft and connecting tunnel (plenum), splitting the proposed tunnel

COMMENTS

RESPONSES

into two unequal lengths. The Intermediate Ventilation Facility would consist of a building, approximately 100 feet by 200 feet in plan with a maximum height of 60 feet.

Response to Comment 5:
The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

Response to Comment 6:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be fully compensated for the cost of repairs.

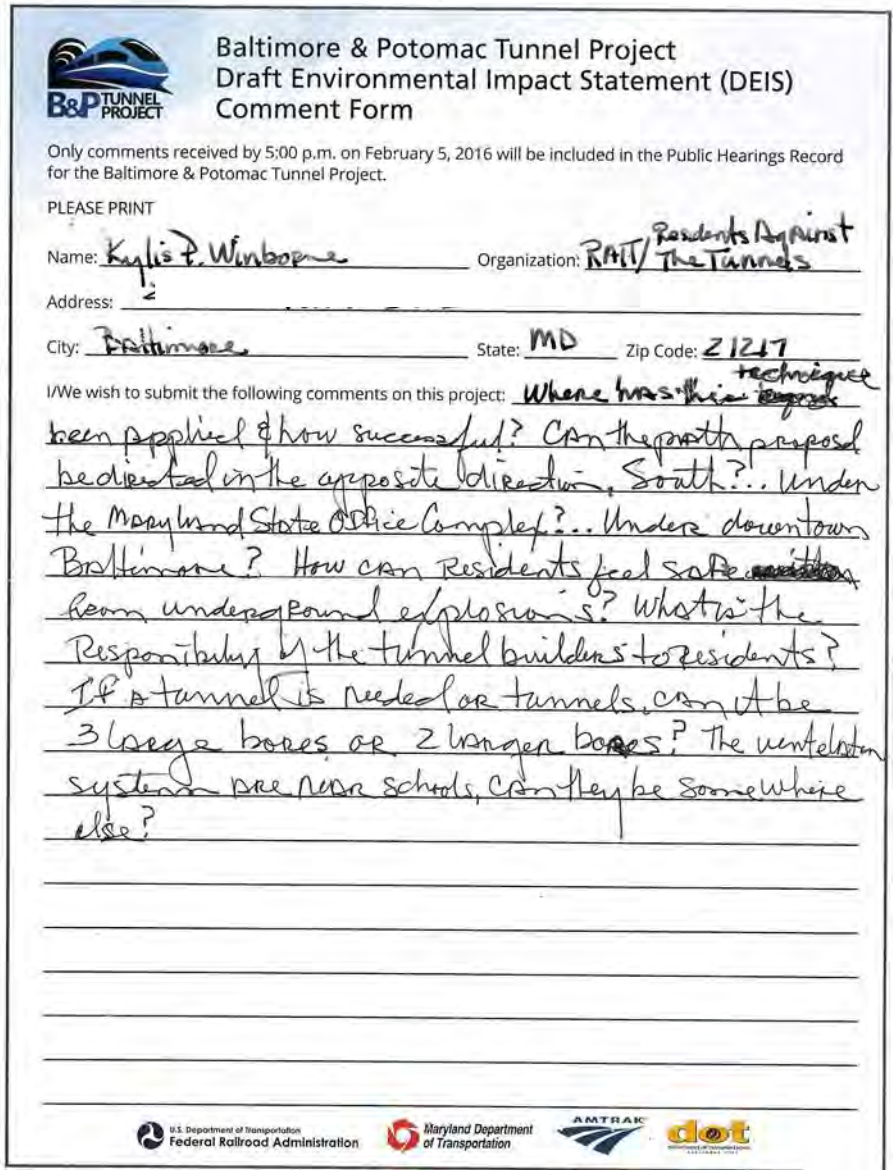
Response to Comment 7:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

As described in **Chapter III** of the FEIS, Alternative 2: Reconstruct/Modernize Existing Tunnel was eliminated from further consideration for specific engineering and operational reasons. Due to the shallow depth of the existing tunnel, the only viable construction approach is open excavation along the entire tunnel length. This excavation would have significant impacts on the community, including:

COMMENTS	RESPONSES
	- Full or partial closure of Wilson Street, Winchester Street, and numerous cross streets throughout construction; - No parking along Wilson Street or Winchester Street during construction; - Limitations for residential and commercial access along Wilson Street and Winchester Street during construction; - Minor impacts to four parks—Eutaw Place Median Park, Park Avenue Median Park, Mount Royal Median Park, and Fitzgerald Park; - Substantial residential property impacts; and - Severe impacts to North Avenue, central Light Rail line, and CSX Main Line operations due to open cut construction through North Avenue, light rail, and CSX track beds. Additionally, for construction to advance, at minimum, one track would have to be removed from service. It would be impossible to provide adequate NEC service using a single track, particularly as ridership and train frequency increase over time.

COMMENTS

DEIS Comment 102:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February 5, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: Kylis P. Winborne
Organization: RAT/ Residents Against The Tunnels
Address: [redacted]
City: Baltimore
State: MD
Zip Code: 21217

I/We wish to submit the following comments on this project: Where has this technique
1 been applied & how successful? Can the path proposd
2 be directed in the opposite direction, South?.. under
the Maryland State Office Complex?.. Under downtown
3 Baltimore? How can Residents feel safe
from underground explosions? What is the
Responsibility of the tunnel builders to residents?
4 If a tunnel is needed or tunnels, can it be
3 large bores or 2 longer bores? The ventelation
5 system are near schools, can they be somewhere
else?

U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK
dot

RESPONSES

Response to Comment 1:
All of the proposed Project infrastructure will be designed, constructed, and maintained using proven modern design and safety standards. The Project will be designed in accordance with applicable regulations, oversight agency guidance, and knowledge of safety standards to ensure optimal safety.

Response to Comment 2:
A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Response to Comment 3:
Local responders receive training for a variety of incidents related to specific facilities, including the B&P Tunnel. The tunnel would be constructed to meet current standards for fire protection. Additionally, the Project sponsor will develop an Emergency Management Plan to be implemented in the event of a tunnel emergency.

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The*

COMMENTS

RESPONSES

> *Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be fully compensated for the cost of repairs.

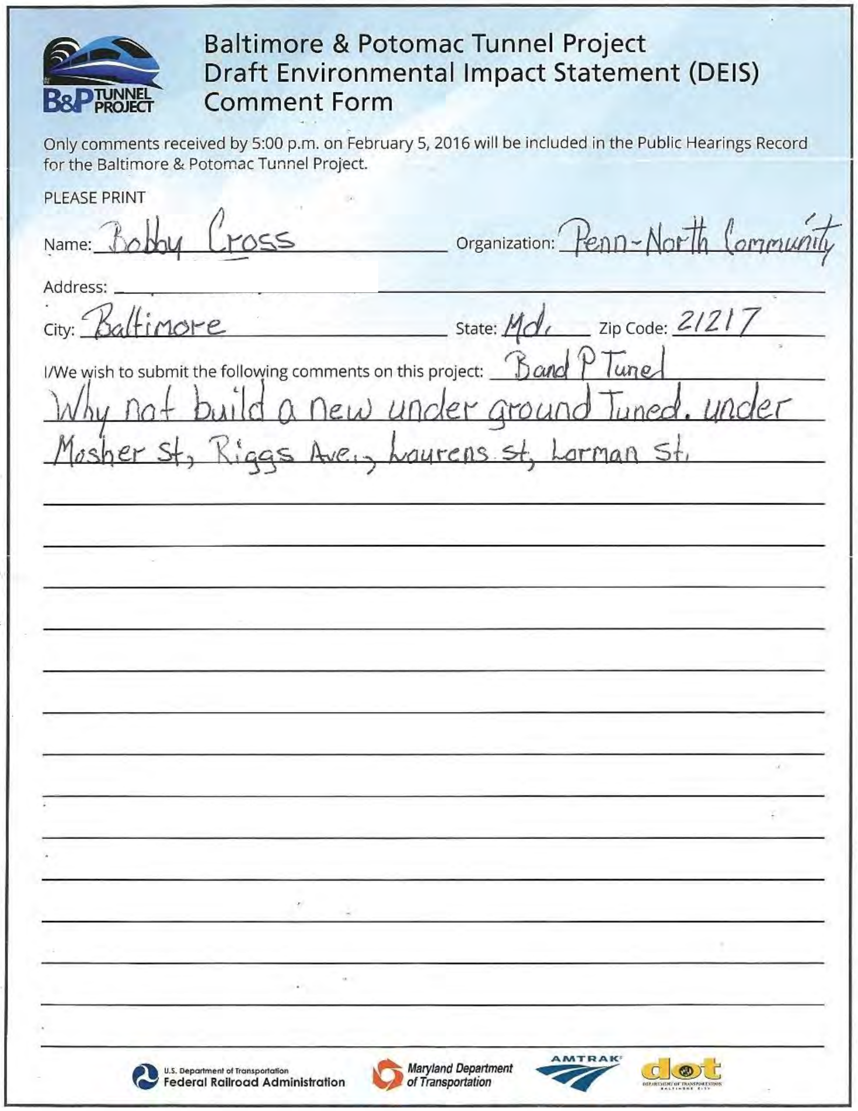
Response to Comment 4:
The Northeast Corridor (NEC) faces serious challenges to meet current and projected travel demand. Responding to these pressing issues, the FRA initiated the NEC FUTURE Environmental Impact Statement as a comprehensive planning process for future investment in the corridor. The NEC FUTURE identified the B&P Tunnel as one of the segments along the NEC that faces capacity constraints and reliability challenges due to multiple chokepoints and state-of-good-repair needs.

Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to

COMMENTS	RESPONSES
	service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains. **Response to Comment 5:** The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**. In response to your concern regarding ventilation system emissions and schools, please see **Chapter VI** of this FEIS, where Children's Health was assessed for Project impacts to Air Quality, Water, Soil and Hazardous Material. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

COMMENTS

DEIS Comment 103:



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Draft Environmental Impact Statement (DEIS)
Comment Form

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PLEASE PRINT

Name: Bobby Cross
Organization: Penn-North Community
Address: [redacted]
City: Baltimore
State: Md.
Zip Code: 21217

I/We wish to submit the following comments on this project: Band P Tunel

1 Why not build a new under ground Tuned. under Mosher St, Riggs Ave., Laurens st, Lorman St.

U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK

RESPONSES

Response to Comment 1:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and fourteen new location alternatives. The new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

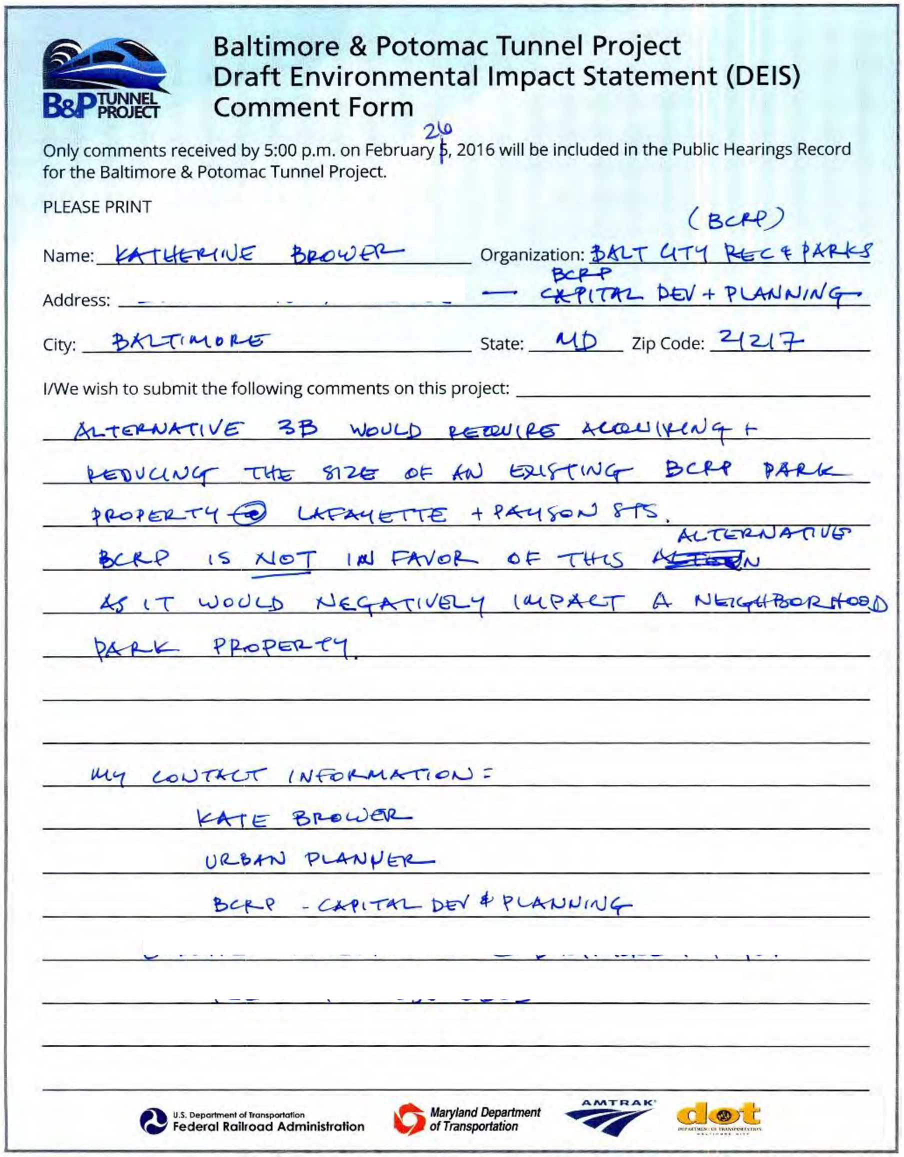
Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

RESPONSES

DEIS Comment 104:



Baltimore & Potomac Tunnel Project
Draft Environmental Impact Statement (DEIS)
Comment Form

Only comments received by 5:00 p.m. on February ~~5~~ 26, 2016 will be included in the Public Hearings Record for the Baltimore & Potomac Tunnel Project.

PLEASE PRINT

Name: KATHERINE BROWER
Organization: BALT CITY REC & PARKS (BCRP)
Address: [redacted] — BCRP CAPITAL DEV + PLANNING
City: BALTIMORE
State: MD
Zip Code: 21217

I/We wish to submit the following comments on this project:

1 ALTERNATIVE 3B WOULD REQUIRE ACQUIRING + REDUCING THE SIZE OF AN EXISTING BCRP PARK PROPERTY @ LAFAYETTE + PAYSON STS. BCRP IS NOT IN FAVOR OF THIS ~~ACTION~~ ALTERNATIVE AS IT WOULD NEGATIVELY IMPACT A NEIGHBORHOOD PARK PROPERTY.

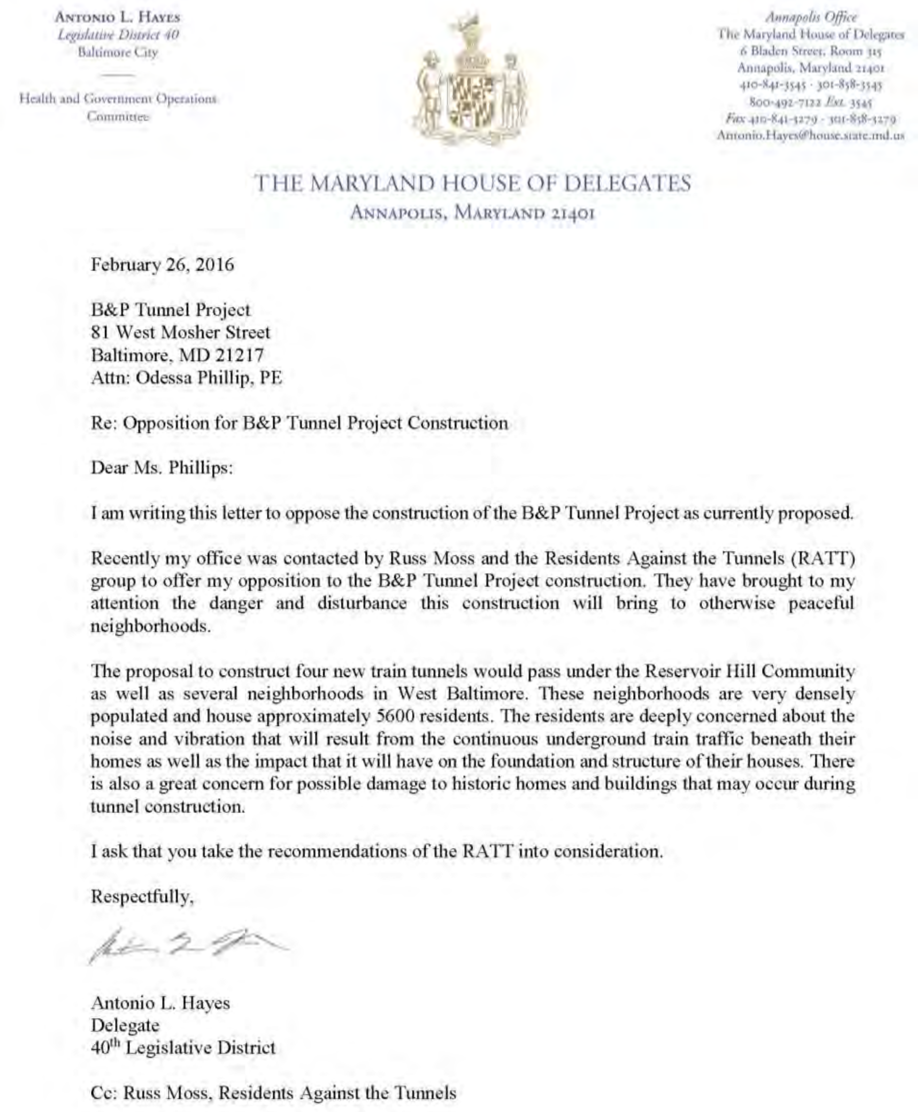
MY CONTACT INFORMATION:
KATE BROWER
URBAN PLANNER
BCRP - CAPITAL DEV & PLANNING
[redacted]

U.S. Department of Transportation Federal Railroad Administration
Maryland Department of Transportation
AMTRAK
dot

Response to Comment 1:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. As a result of these changes, Alternative 3B would avoid impacts to the Baltimore City Recreation and Parks Department property at Lafayette and Payson Streets. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

DEIS Comment 105:



Antonio L. Hayes
Legislative District 40
Baltimore City

Health and Government Operations
Committee

Annapolis Office
The Maryland House of Delegates
6 Bladen Street, Room 315
Annapolis, Maryland 21401
410-841-3545 · 301-858-3545
800-492-7122 *Ext.* 3545
Fax 410-841-3279 · 301-858-3279
Antonio.Hayes@house.state.md.us

THE MARYLAND HOUSE OF DELEGATES
Annapolis, Maryland 21401

February 26, 2016

B&P Tunnel Project
81 West Mosher Street
Baltimore, MD 21217
Attn: Odessa Phillip, PE

Re: Opposition for B&P Tunnel Project Construction

Dear Ms. Phillips:

I am writing this letter to oppose the construction of the B&P Tunnel Project as currently proposed.

Recently my office was contacted by Russ Moss and the Residents Against the Tunnels (RATT) group to offer my opposition to the B&P Tunnel Project construction. They have brought to my attention the danger and disturbance this construction will bring to otherwise peaceful neighborhoods.

1 The proposal to construct four new train tunnels would pass under the Reservoir Hill Community as well as several neighborhoods in West Baltimore. These neighborhoods are very densely populated and house approximately 5600 residents. The residents are deeply concerned about the noise and vibration that will result from the continuous underground train traffic beneath their homes as well as the impact that it will have on the foundation and structure of their houses. There is also a great concern for possible damage to historic homes and buildings that may occur during tunnel construction.

I ask that you take the recommendations of the RATT into consideration.

Respectfully,

Antonio L. Hayes
Delegate
40th Legislative District

Cc: Russ Moss, Residents Against the Tunnels

RESPONSES

Response to Comment 1:
The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA's *Transit Noise and Vibration Impact Assessment*, and construction vibration levels were also evaluated using both FTA guidelines and standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

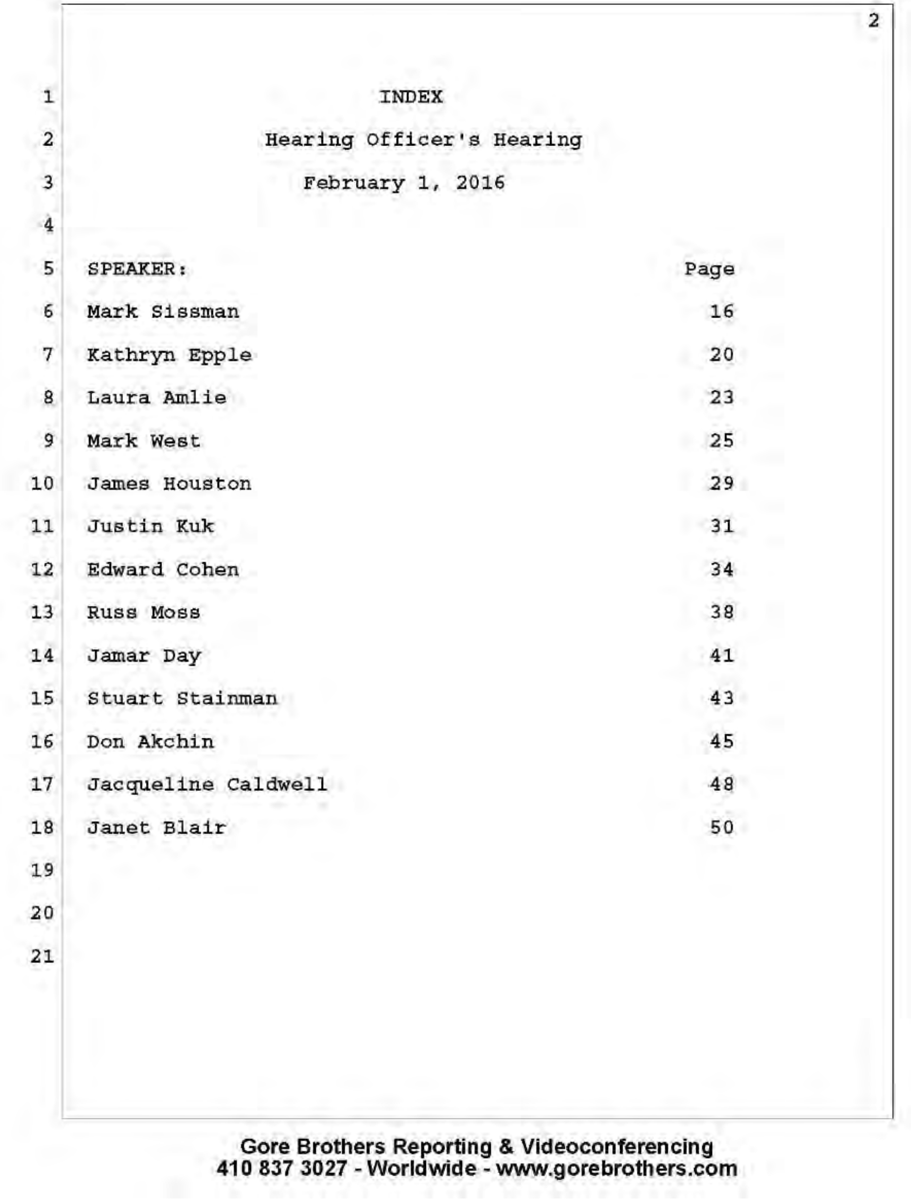
Heavy machinery is the major source of vibration during construction. These could include tunnel boring machines (TBM), earth-moving equipment and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips). TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the

COMMENTS	RESPONSES
	surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold. All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI**. The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

COMMENTS

RESPONSES



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Hearing Officer's Hearing

February 1, 2016

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COMMENTS

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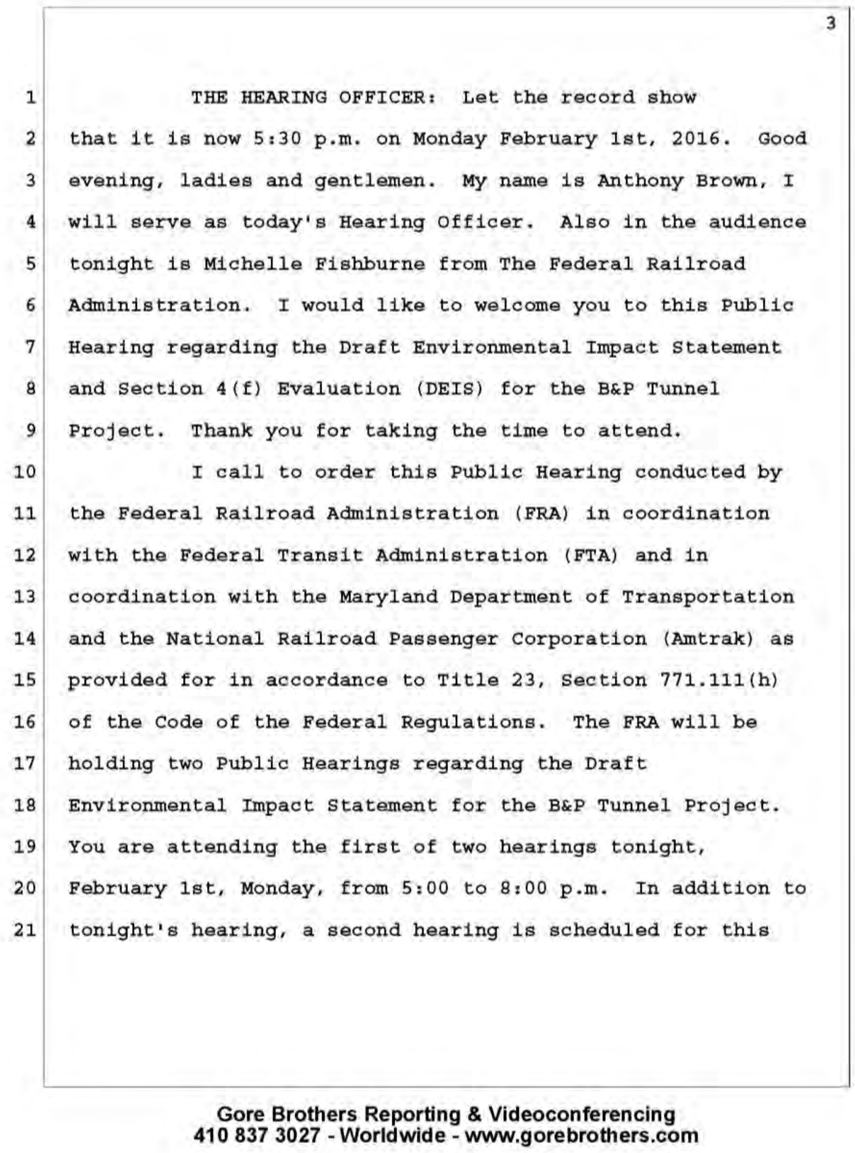

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THE HEARING OFFICER: Let the record show that it is now 5:30 p.m. on Monday February 1st, 2016. Good evening, ladies and gentlemen. My name is Anthony Brown, I will serve as today's Hearing Officer. Also in the audience tonight is Michelle Fishburne from The Federal Railroad Administration. I would like to welcome you to this Public Hearing regarding the Draft Environmental Impact Statement and Section 4(f) Evaluation (DEIS) for the B&P Tunnel Project. Thank you for taking the time to attend.

I call to order this Public Hearing conducted by the Federal Railroad Administration (FRA) in coordination with the Federal Transit Administration (FTA) and in coordination with the Maryland Department of Transportation and the National Railroad Passenger Corporation (Amtrak) as provided for in accordance to Title 23, Section 771.111(h) of the Code of the Federal Regulations. The FRA will be holding two Public Hearings regarding the Draft Environmental Impact Statement for the B&P Tunnel Project. You are attending the first of two hearings tonight, February 1st, Monday, from 5:00 to 8:00 p.m. In addition to tonight's hearing, a second hearing is scheduled for this

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COMMENTS

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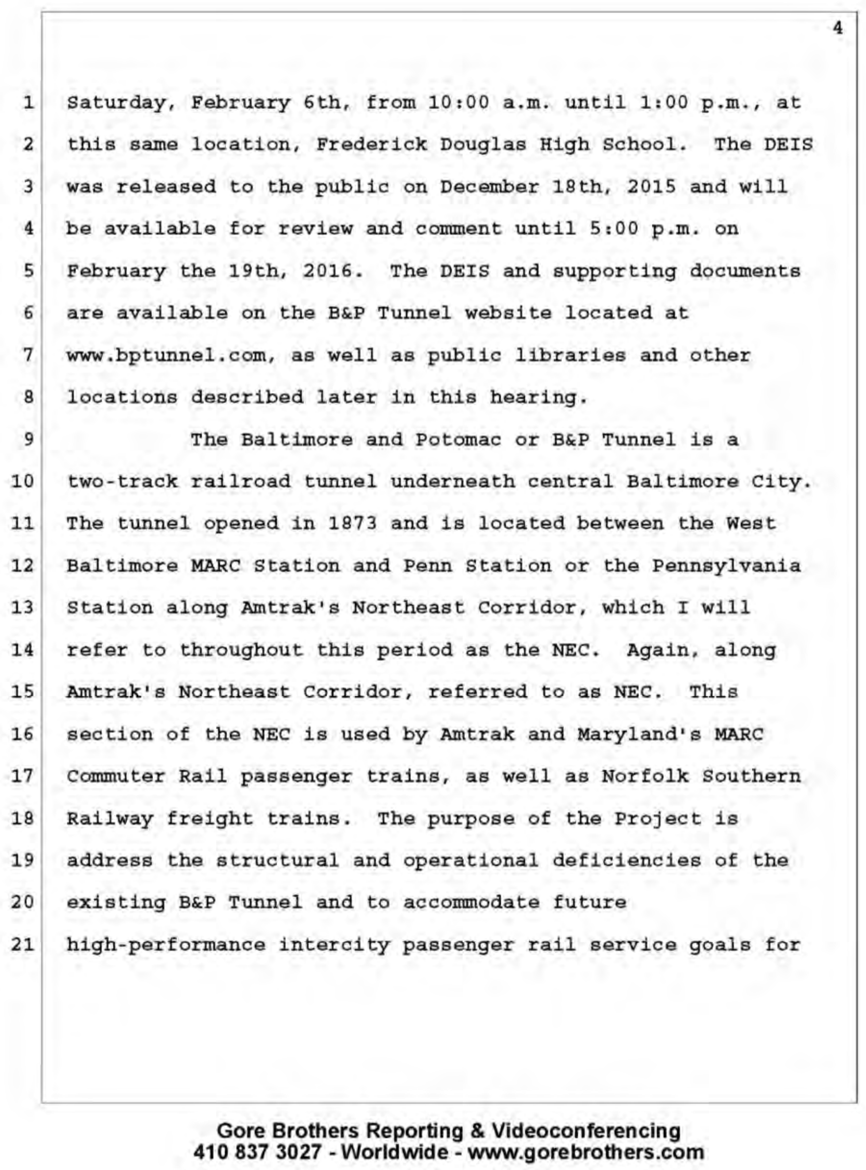

Saturday, February 6th, from 10:00 a.m. until 1:00 p.m., at this same location, Frederick Douglas High School. The DEIS was released to the public on December 18th, 2015 and will be available for review and comment until 5:00 p.m. on February the 19th, 2016. The DEIS and supporting documents are available on the B&P Tunnel website located at www.bptunnel.com, as well as public libraries and other locations described later in this hearing.

The Baltimore and Potomac or B&P Tunnel is a two-track railroad tunnel underneath central Baltimore City. The tunnel opened in 1873 and is located between the West Baltimore MARC Station and Penn Station or the Pennsylvania Station along Amtrak's Northeast Corridor, which I will refer to throughout this period as the NEC. Again, along Amtrak's Northeast Corridor, referred to as NEC. This section of the NEC is used by Amtrak and Maryland's MARC Commuter Rail passenger trains, as well as Norfolk Southern Railway freight trains. The purpose of the Project is address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for

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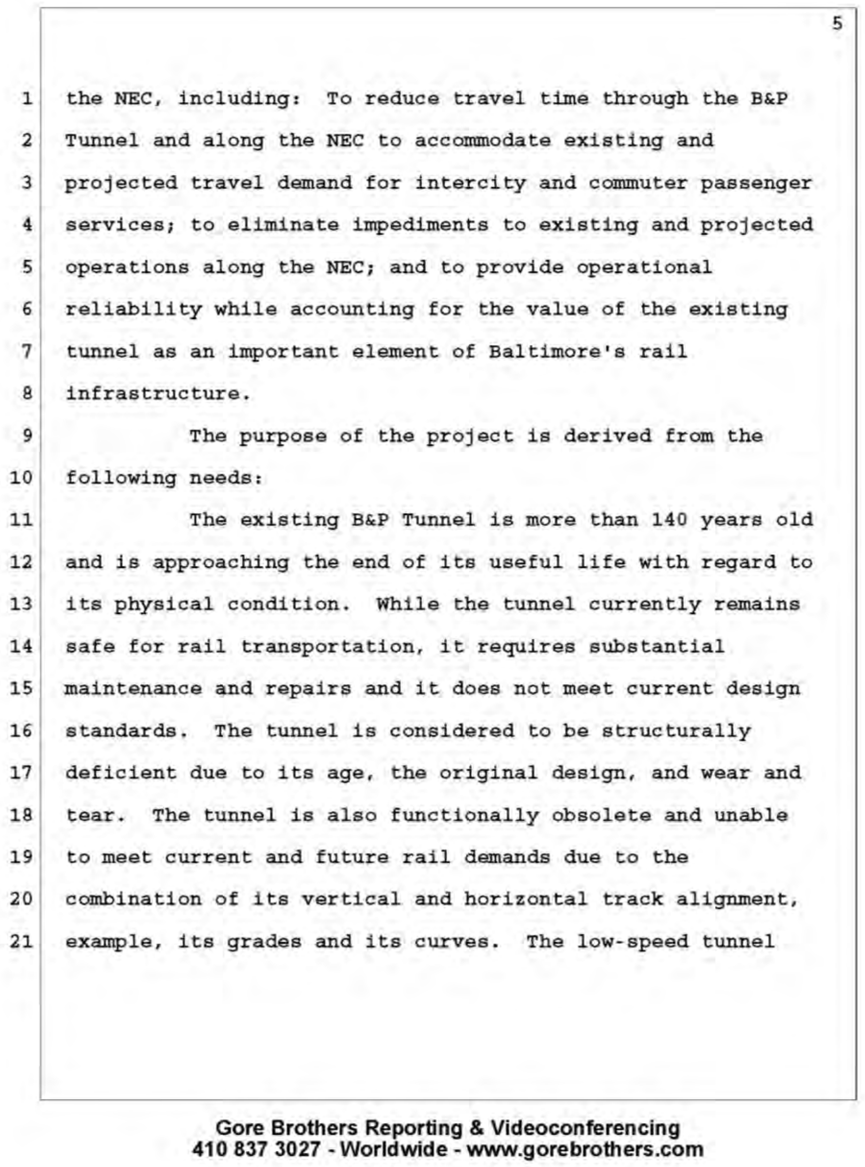

the NEC, including: To reduce travel time through the B&P Tunnel and along the NEC to accommodate existing and projected travel demand for intercity and commuter passenger services; to eliminate impediments to existing and projected operations along the NEC; and to provide operational reliability while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

The purpose of the project is derived from the following needs:

The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the tunnel currently remains safe for rail transportation, it requires substantial maintenance and repairs and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands due to the combination of its vertical and horizontal track alignment, example, its grades and its curves. The low-speed tunnel

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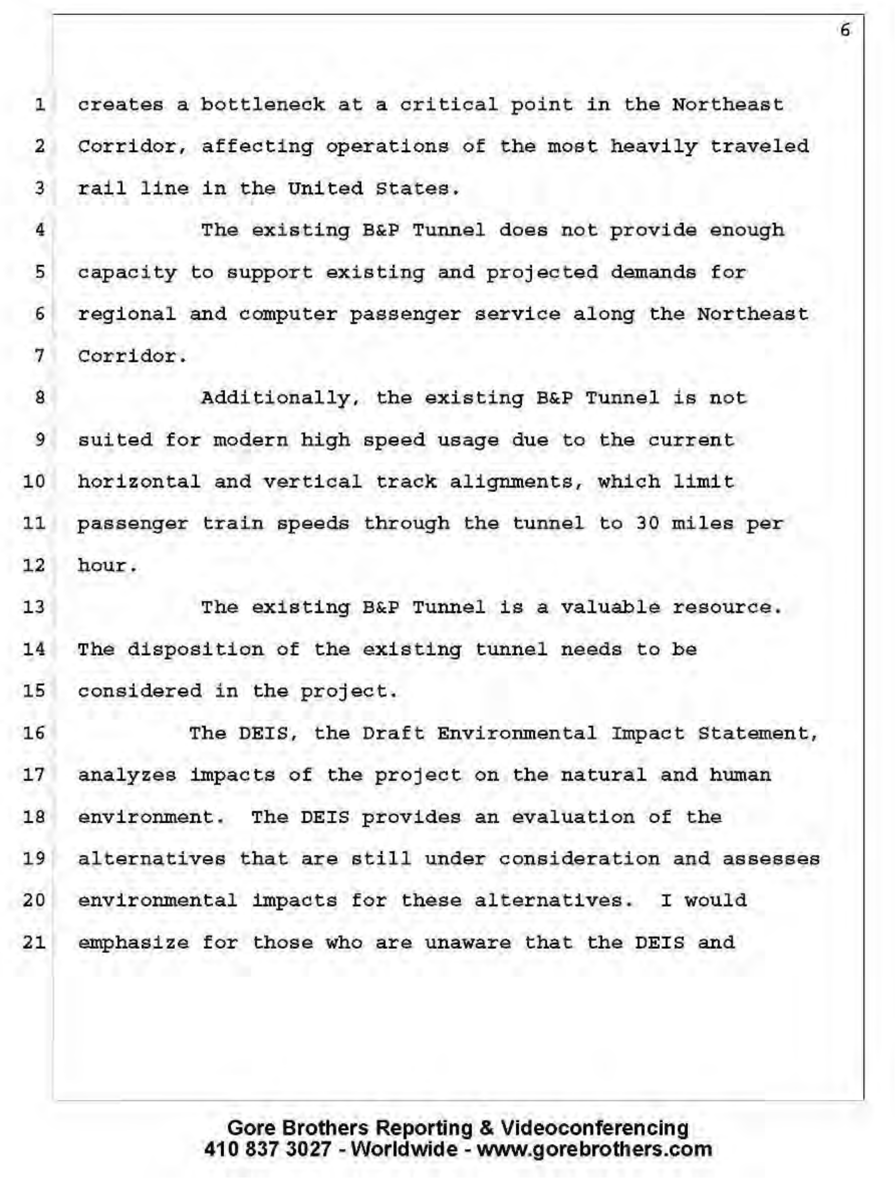

creates a bottleneck at a critical point in the Northeast Corridor, affecting operations of the most heavily traveled rail line in the United States.

The existing B&P Tunnel does not provide enough capacity to support existing and projected demands for regional and computer passenger service along the Northeast Corridor.

Additionally, the existing B&P Tunnel is not suited for modern high speed usage due to the current horizontal and vertical track alignments, which limit passenger train speeds through the tunnel to 30 miles per hour.

The existing B&P Tunnel is a valuable resource. The disposition of the existing tunnel needs to be considered in the project.

The DEIS, the Draft Environmental Impact Statement, analyzes impacts of the project on the natural and human environment. The DEIS provides an evaluation of the alternatives that are still under consideration and assesses environmental impacts for these alternatives. I would emphasize for those who are unaware that the DEIS and

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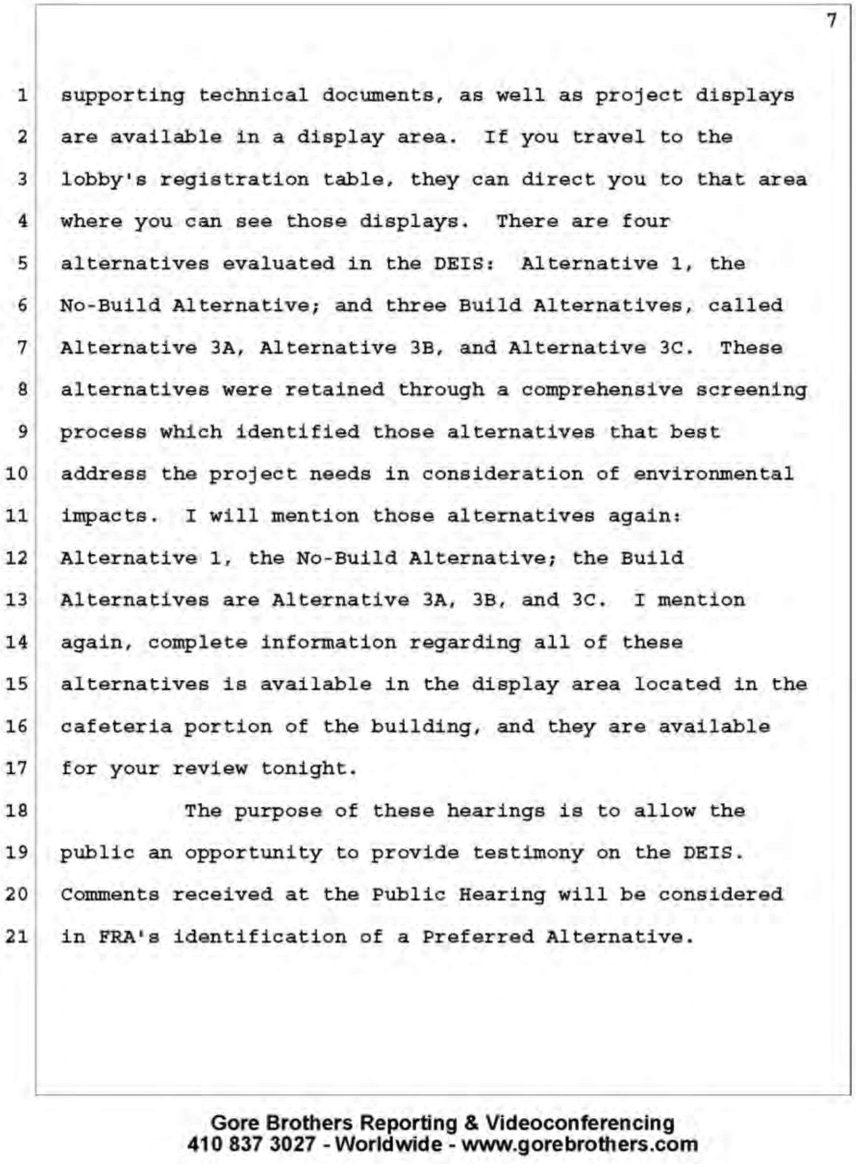
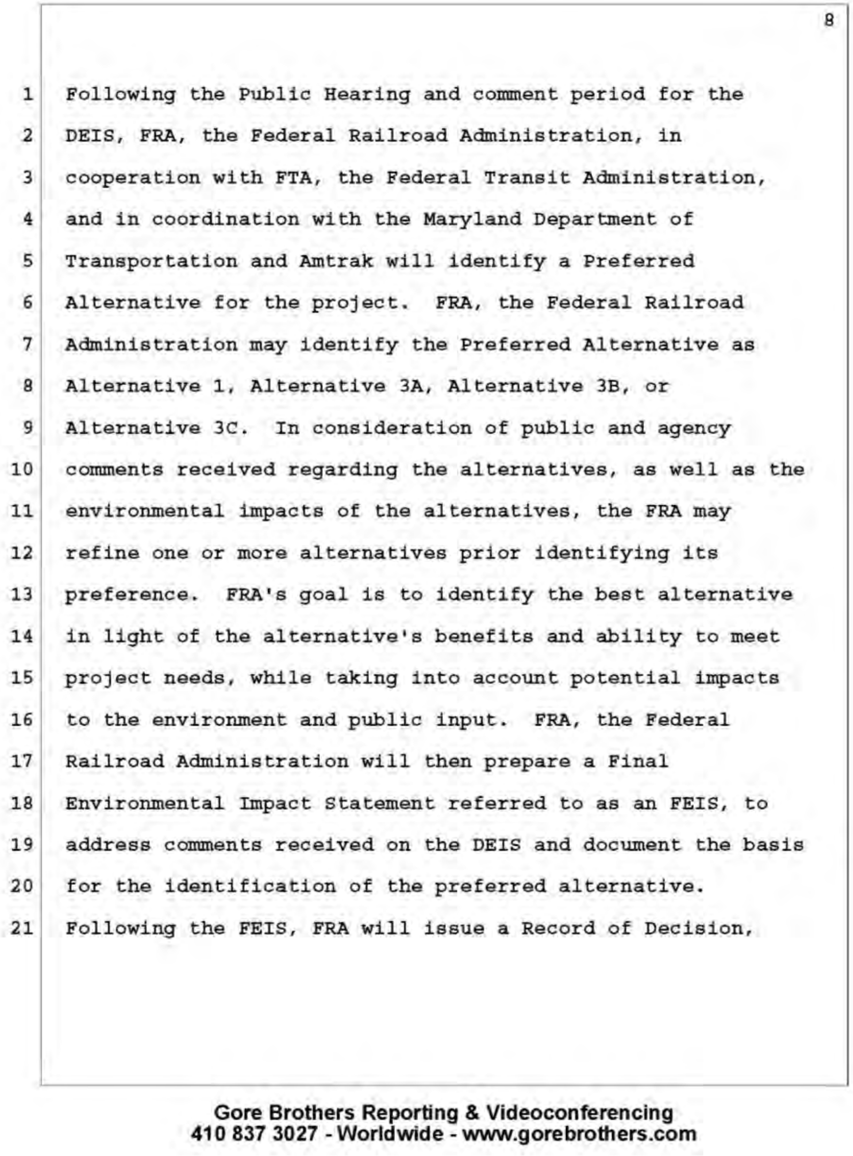


supporting technical documents, as well as project displays are available in a display area. If you travel to the lobby's registration table, they can direct you to that area where you can see those displays. There are four alternatives evaluated in the DEIS: Alternative 1, the No-Build Alternative; and three Build Alternatives, called Alternative 3A, Alternative 3B, and Alternative 3C. These alternatives were retained through a comprehensive screening process which identified those alternatives that best address the project needs in consideration of environmental impacts. I will mention those alternatives again: Alternative 1, the No-Build Alternative; the Build Alternatives are Alternative 3A, 3B, and 3C. I mention again, complete information regarding all of these alternatives is available in the display area located in the cafeteria portion of the building, and they are available for your review tonight.

The purpose of these hearings is to allow the public an opportunity to provide testimony on the DEIS. Comments received at the Public Hearing will be considered in FRA's identification of a Preferred Alternative.

COMMENTS

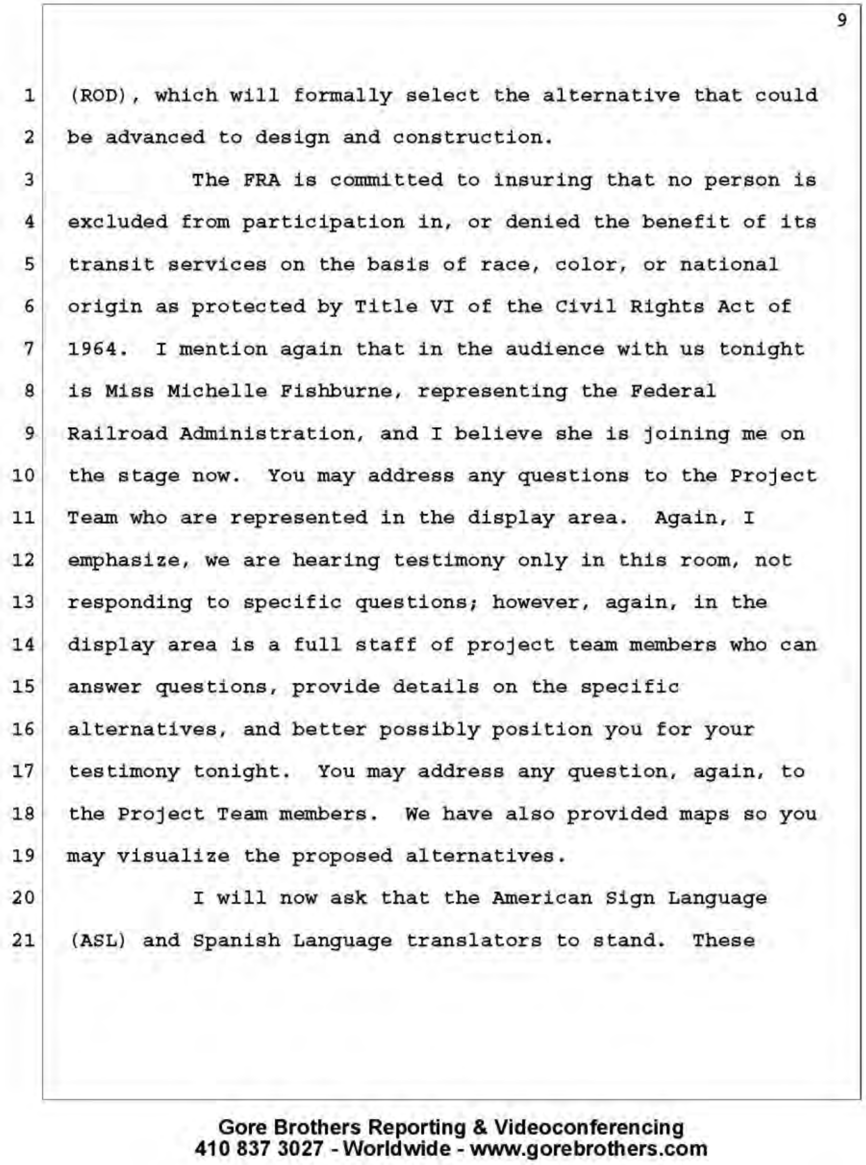
RESPONSES



Following the Public Hearing and comment period for the DEIS, FRA, the Federal Railroad Administration, in cooperation with FTA, the Federal Transit Administration, and in coordination with the Maryland Department of Transportation and Amtrak will identify a Preferred Alternative for the project. FRA, the Federal Railroad Administration may identify the Preferred Alternative as Alternative 1, Alternative 3A, Alternative 3B, or Alternative 3C. In consideration of public and agency comments received regarding the alternatives, as well as the environmental impacts of the alternatives, the FRA may refine one or more alternatives prior identifying its preference. FRA's goal is to identify the best alternative in light of the alternative's benefits and ability to meet project needs, while taking into account potential impacts to the environment and public input. FRA, the Federal Railroad Administration will then prepare a Final Environmental Impact Statement referred to as an FEIS, to address comments received on the DEIS and document the basis for the identification of the preferred alternative. Following the FEIS, FRA will issue a Record of Decision,

COMMENTS

RESPONSES



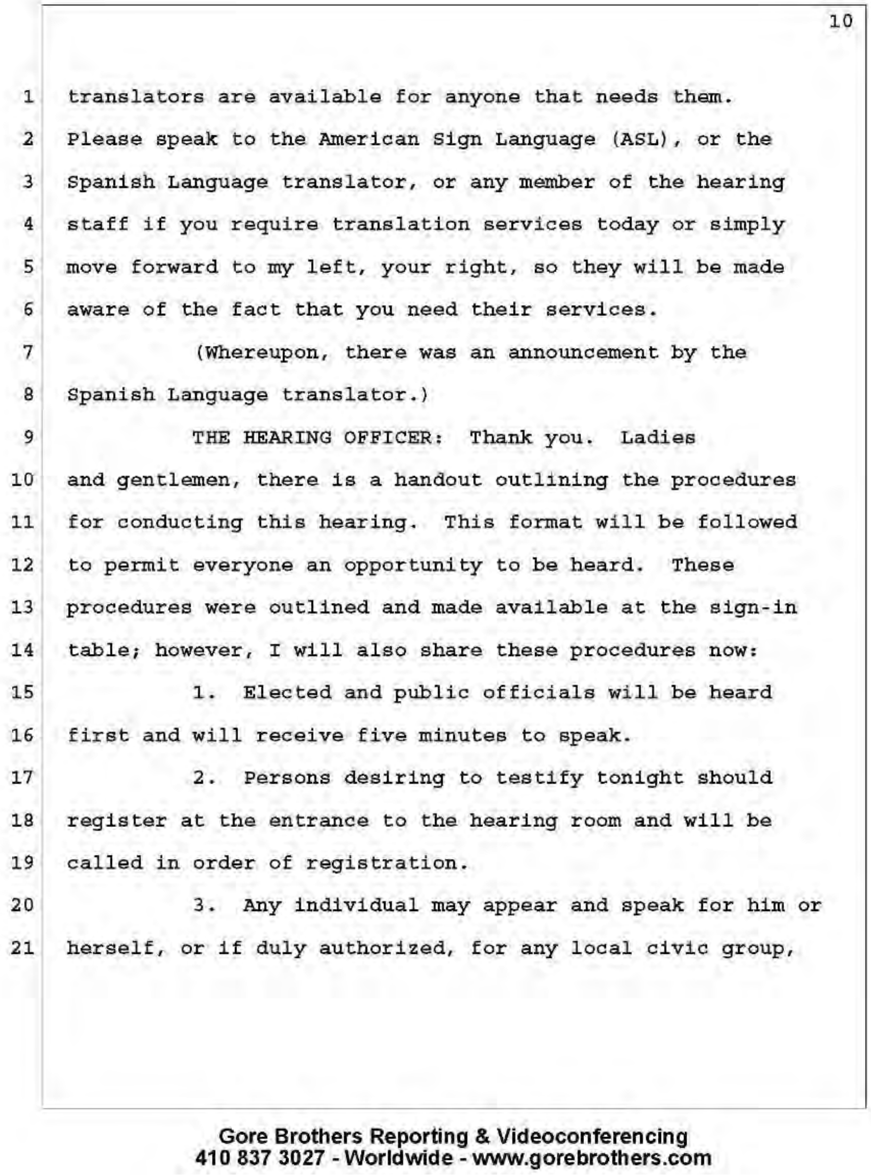
(ROD), which will formally select the alternative that could be advanced to design and construction.

The FRA is committed to insuring that no person is excluded from participation in, or denied the benefit of its transit services on the basis of race, color, or national origin as protected by Title VI of the Civil Rights Act of 1964. I mention again that in the audience with us tonight is Miss Michelle Fishburne, representing the Federal Railroad Administration, and I believe she is joining me on the stage now. You may address any questions to the Project Team who are represented in the display area. Again, I emphasize, we are hearing testimony only in this room, not responding to specific questions; however, again, in the display area is a full staff of project team members who can answer questions, provide details on the specific alternatives, and better possibly position you for your testimony tonight. You may address any question, again, to the Project Team members. We have also provided maps so you may visualize the proposed alternatives.

I will now ask that the American Sign Language (ASL) and Spanish Language translators to stand. These

COMMENTS

RESPONSES



translators are available for anyone that needs them. Please speak to the American Sign Language (ASL), or the Spanish Language translator, or any member of the hearing staff if you require translation services today or simply move forward to my left, your right, so they will be made aware of the fact that you need their services.

(Whereupon, there was an announcement by the Spanish Language translator.)

THE HEARING OFFICER: Thank you. Ladies and gentlemen, there is a handout outlining the procedures for conducting this hearing. This format will be followed to permit everyone an opportunity to be heard. These procedures were outlined and made available at the sign-in table; however, I will also share these procedures now:

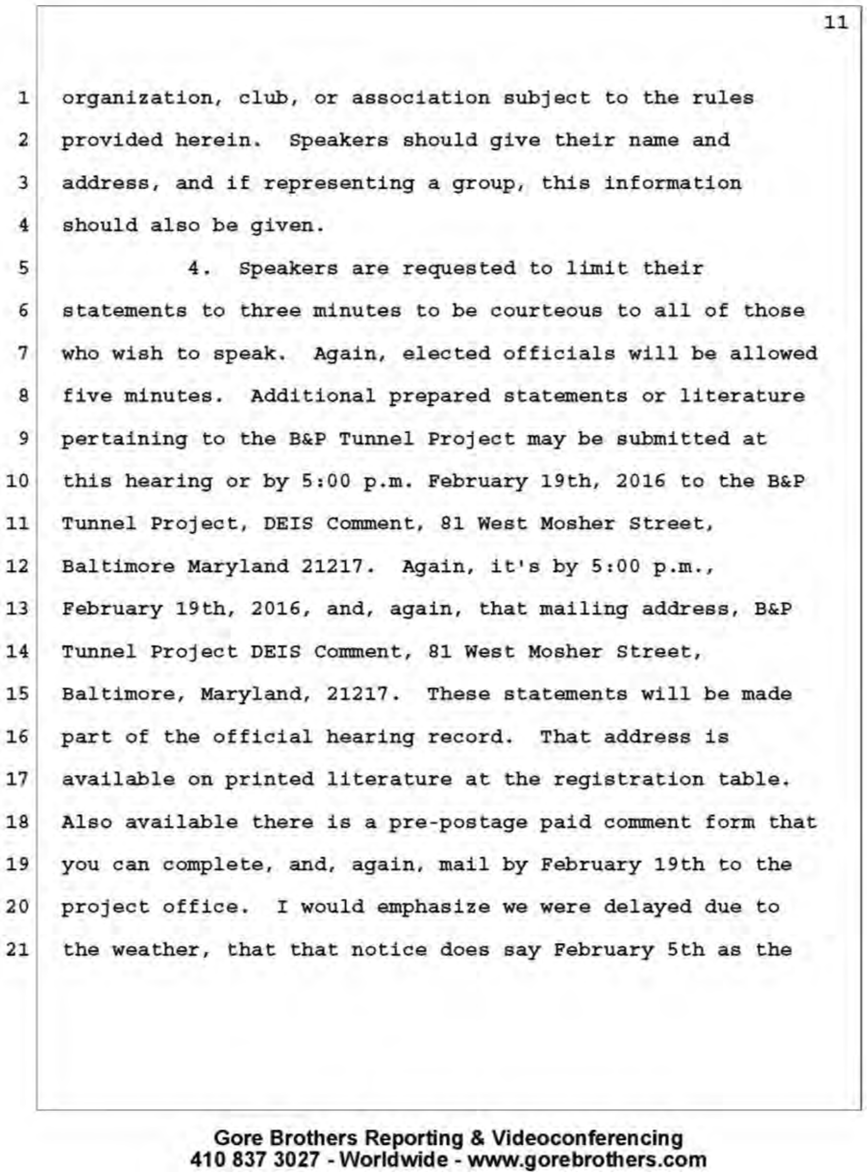
1. Elected and public officials will be heard first and will receive five minutes to speak.

2. Persons desiring to testify tonight should register at the entrance to the hearing room and will be called in order of registration.

3. Any individual may appear and speak for him or herself, or if duly authorized, for any local civic group,

COMMENTS

RESPONSES

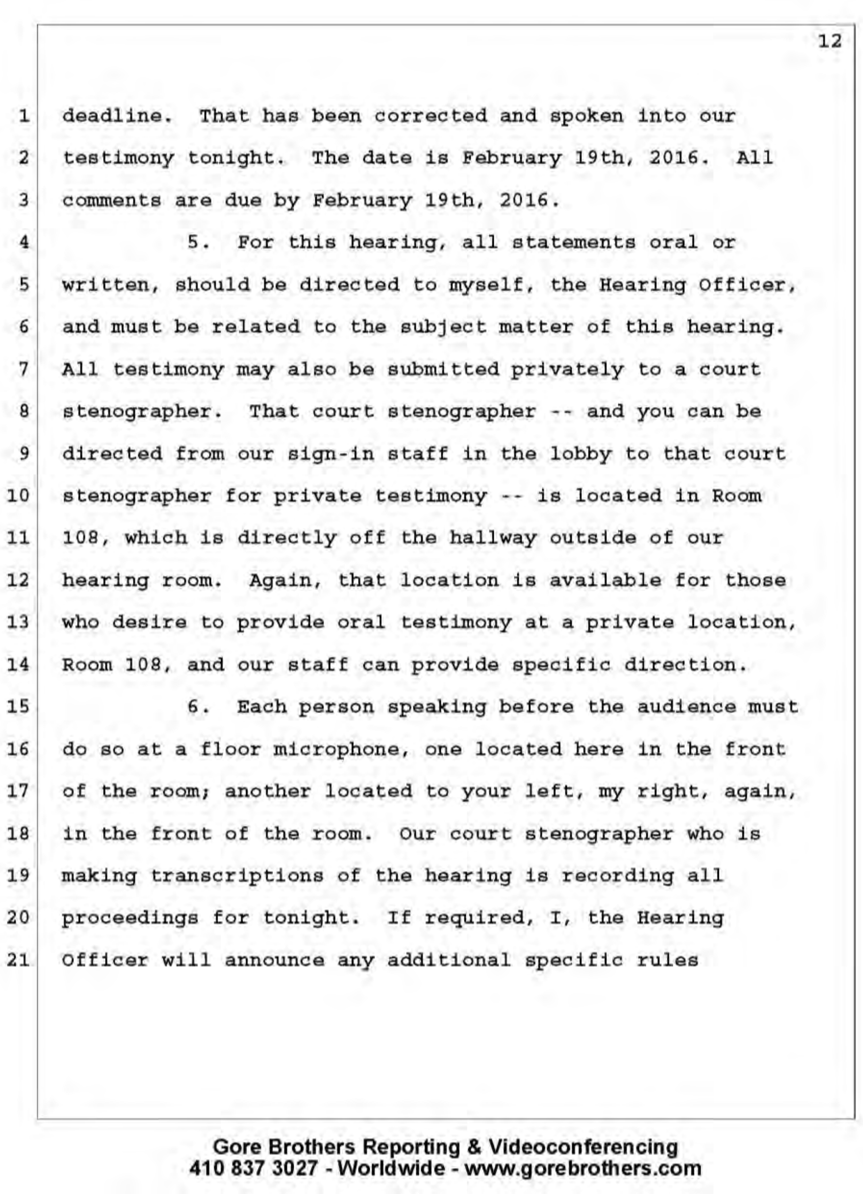


organization, club, or association subject to the rules provided herein. Speakers should give their name and address, and if representing a group, this information should also be given.

4. Speakers are requested to limit their statements to three minutes to be courteous to all of those who wish to speak. Again, elected officials will be allowed five minutes. Additional prepared statements or literature pertaining to the B&P Tunnel Project may be submitted at this hearing or by 5:00 p.m. February 19th, 2016 to the B&P Tunnel Project, DEIS Comment, 81 West Mosher Street, Baltimore Maryland 21217. Again, it's by 5:00 p.m., February 19th, 2016, and, again, that mailing address, B&P Tunnel Project DEIS Comment, 81 West Mosher Street, Baltimore, Maryland, 21217. These statements will be made part of the official hearing record. That address is available on printed literature at the registration table. Also available there is a pre-postage paid comment form that you can complete, and, again, mail by February 19th to the project office. I would emphasize we were delayed due to the weather, that that notice does say February 5th as the

COMMENTS

RESPONSES



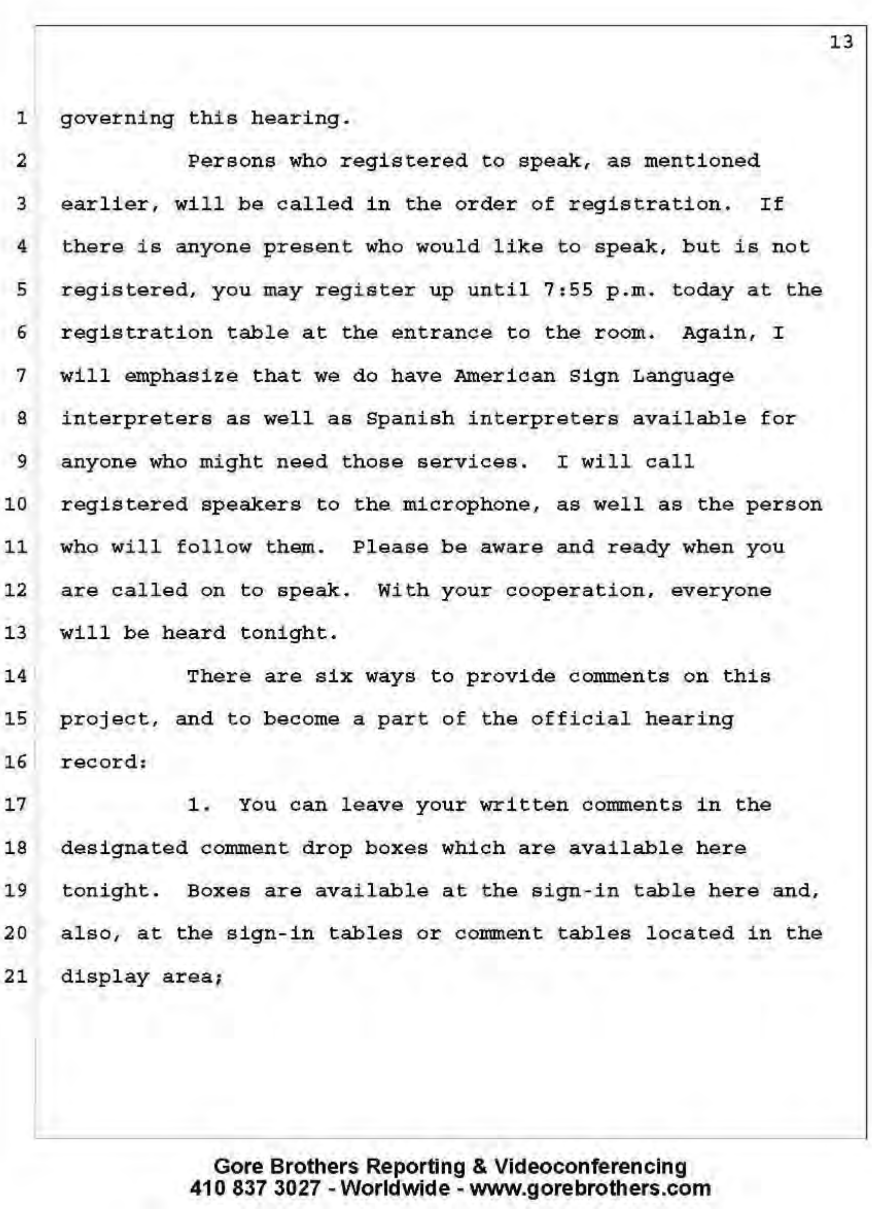
deadline. That has been corrected and spoken into our testimony tonight. The date is February 19th, 2016. All comments are due by February 19th, 2016.

5. For this hearing, all statements oral or written, should be directed to myself, the Hearing Officer, and must be related to the subject matter of this hearing. All testimony may also be submitted privately to a court stenographer. That court stenographer -- and you can be directed from our sign-in staff in the lobby to that court stenographer for private testimony -- is located in Room 108, which is directly off the hallway outside of our hearing room. Again, that location is available for those who desire to provide oral testimony at a private location, Room 108, and our staff can provide specific direction.

6. Each person speaking before the audience must do so at a floor microphone, one located here in the front of the room; another located to your left, my right, again, in the front of the room. Our court stenographer who is making transcriptions of the hearing is recording all proceedings for tonight. If required, I, the Hearing Officer will announce any additional specific rules

COMMENTS

RESPONSES



governing this hearing.

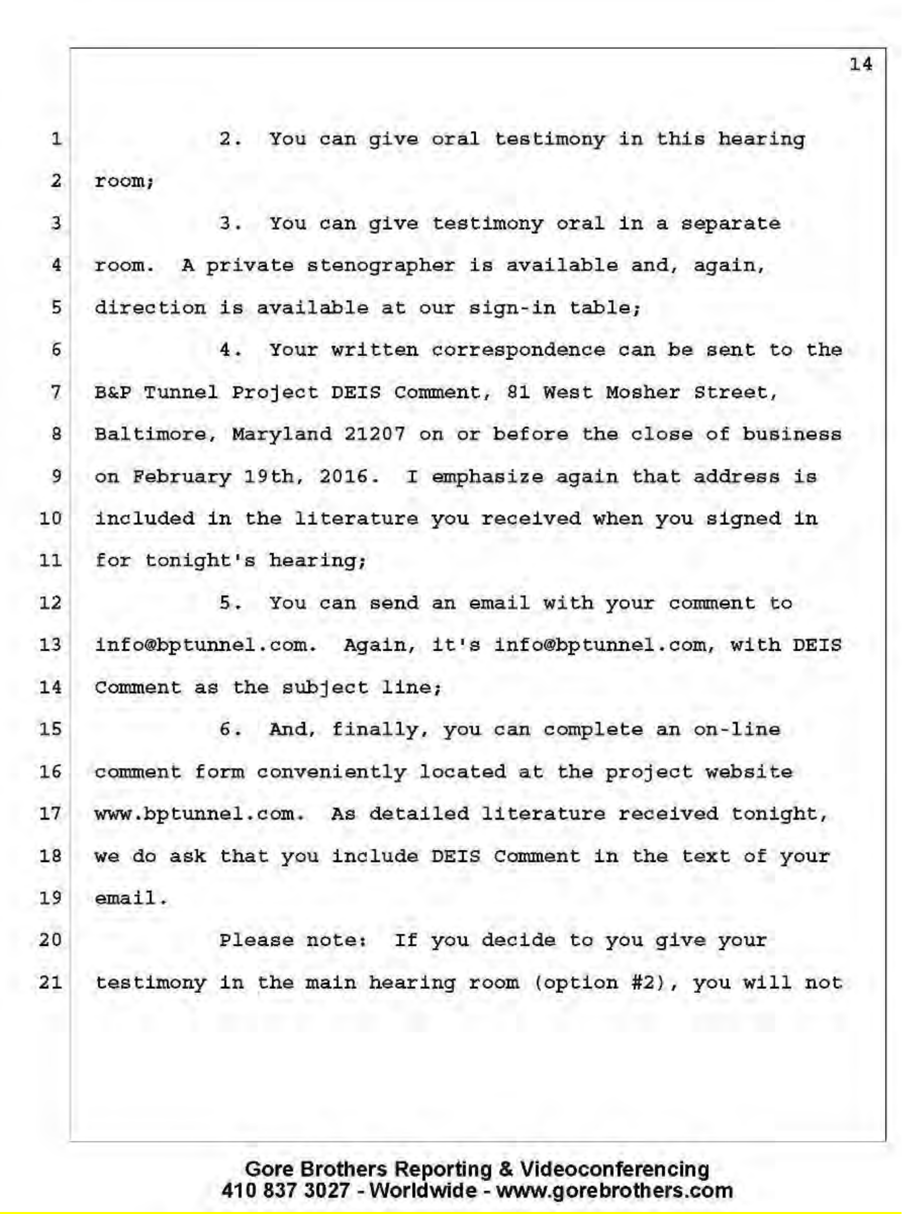
Persons who registered to speak, as mentioned earlier, will be called in the order of registration. If there is anyone present who would like to speak, but is not registered, you may register up until 7:55 p.m. today at the registration table at the entrance to the room. Again, I will emphasize that we do have American Sign Language interpreters as well as Spanish interpreters available for anyone who might need those services. I will call registered speakers to the microphone, as well as the person who will follow them. Please be aware and ready when you are called on to speak. With your cooperation, everyone will be heard tonight.

There are six ways to provide comments on this project, and to become a part of the official hearing record:

1. You can leave your written comments in the designated comment drop boxes which are available here tonight. Boxes are available at the sign-in table here and, also, at the sign-in tables or comment tables located in the display area;

COMMENTS

RESPONSES



2. You can give oral testimony in this hearing room;

3. You can give testimony oral in a separate room. A private stenographer is available and, again, direction is available at our sign-in table;

4. Your written correspondence can be sent to the B&P Tunnel Project DEIS Comment, 81 West Mosher Street, Baltimore, Maryland 21207 on or before the close of business on February 19th, 2016. I emphasize again that address is included in the literature you received when you signed in for tonight's hearing;

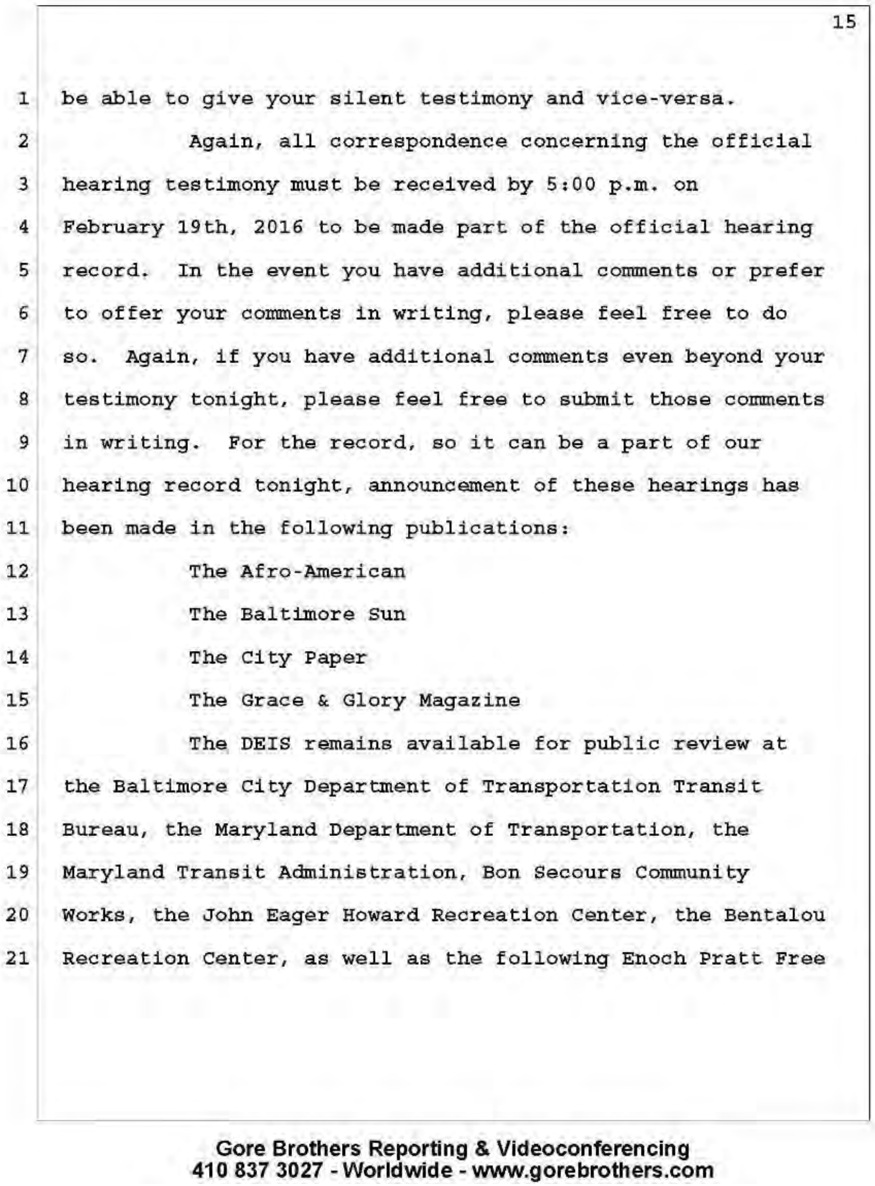
5. You can send an email with your comment to info@bptunnel.com. Again, it's info@bptunnel.com, with DEIS Comment as the subject line;

6. And, finally, you can complete an on-line comment form conveniently located at the project website www.bptunnel.com. As detailed literature received tonight, we do ask that you include DEIS Comment in the text of your email.

Please note: If you decide to you give your testimony in the main hearing room (option #2), you will not

COMMENTS

RESPONSES



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be able to give your silent testimony and vice-versa.

Again, all correspondence concerning the official hearing testimony must be received by 5:00 p.m. on February 19th, 2016 to be made part of the official hearing record. In the event you have additional comments or prefer to offer your comments in writing, please feel free to do so. Again, if you have additional comments even beyond your testimony tonight, please feel free to submit those comments in writing. For the record, so it can be a part of our hearing record tonight, announcement of these hearings has been made in the following publications:

The Afro-American

The Baltimore Sun

The City Paper

The Grace & Glory Magazine

The DEIS remains available for public review at the Baltimore City Department of Transportation Transit Bureau, the Maryland Department of Transportation, the Maryland Transit Administration, Bon Secours Community Works, the John Eager Howard Recreation Center, the Bentalou Recreation Center, as well as the following Enoch Pratt Free

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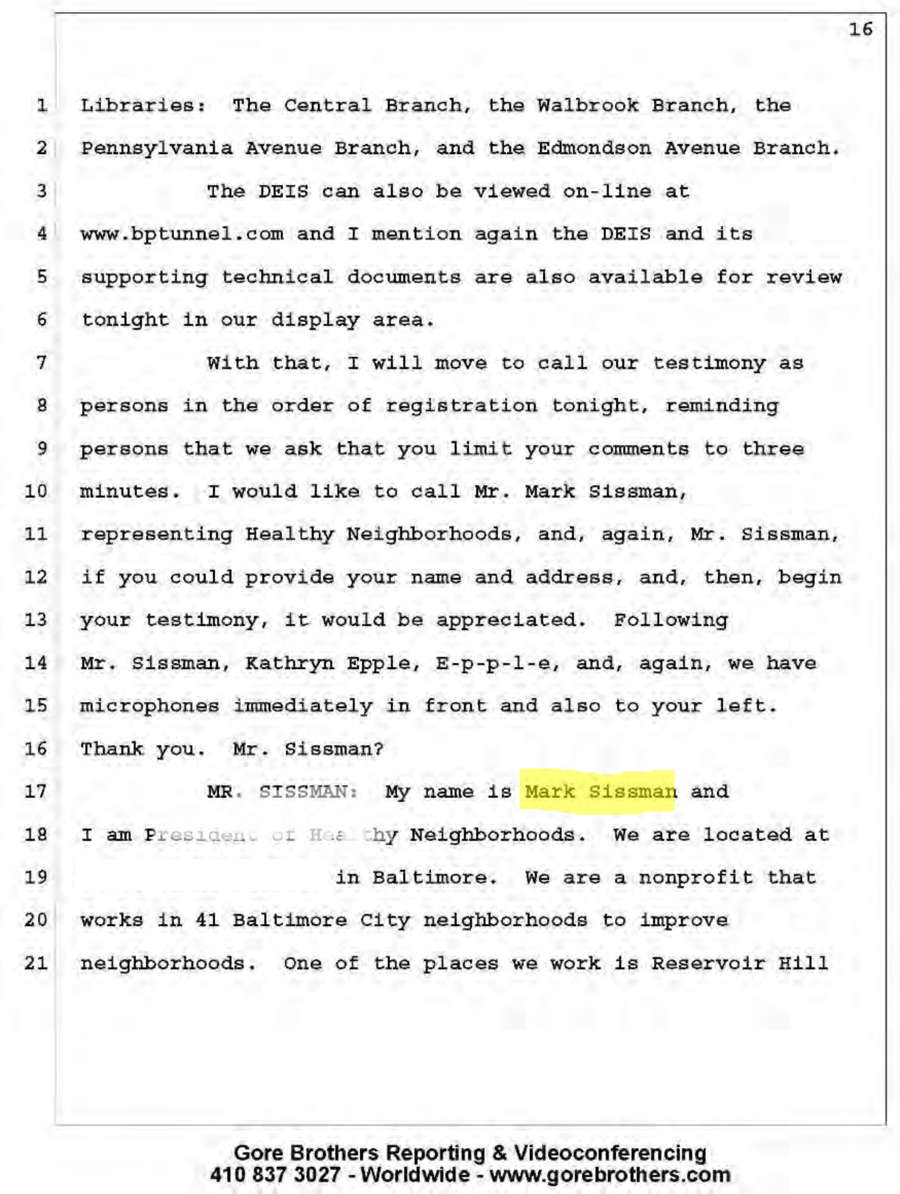
COMMENTS

RESPONSES

DEIS Comment 106:



16

Libraries: The Central Branch, the Walbrook Branch, the Pennsylvania Avenue Branch, and the Edmondson Avenue Branch.

The DEIS can also be viewed on-line at www.bptunnel.com and I mention again the DEIS and its supporting technical documents are also available for review tonight in our display area.

With that, I will move to call our testimony as persons in the order of registration tonight, reminding persons that we ask that you limit your comments to three minutes. I would like to call Mr. Mark Sissman, representing Healthy Neighborhoods, and, again, Mr. Sissman, if you could provide your name and address, and, then, begin your testimony, it would be appreciated. Following Mr. Sissman, Kathryn Epple, E-p-p-l-e, and, again, we have microphones immediately in front and also to your left. Thank you. Mr. Sissman?

MR. SISSMAN: My name is Mark Sissman and I am President of Healthy Neighborhoods. We are located at in Baltimore. We are a nonprofit that works in 41 Baltimore City neighborhoods to improve neighborhoods. One of the places we work is Reservoir Hill

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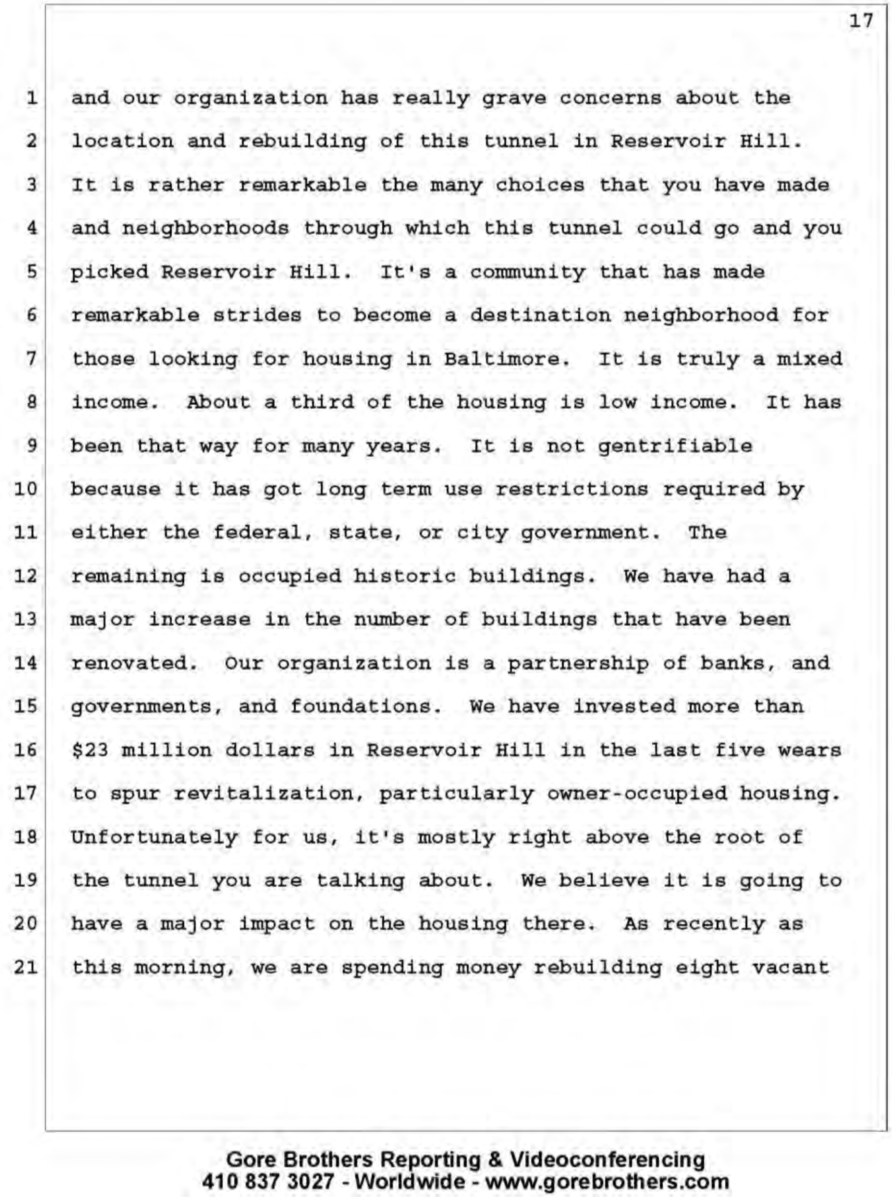
COMMENTS

RESPONSES



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and our organization has really grave concerns about the location and rebuilding of this tunnel in Reservoir Hill. It is rather remarkable the many choices that you have made and neighborhoods through which this tunnel could go and you picked Reservoir Hill. It's a community that has made remarkable strides to become a destination neighborhood for those looking for housing in Baltimore. It is truly a mixed income. About a third of the housing is low income. It has been that way for many years. It is not gentrifiable because it has got long term use restrictions required by either the federal, state, or city government. The remaining is occupied historic buildings. We have had a major increase in the number of buildings that have been renovated. Our organization is a partnership of banks, and governments, and foundations. We have invested more than $23 million dollars in Reservoir Hill in the last five wears to spur revitalization, particularly owner-occupied housing. Unfortunately for us, it's mostly right above the root of the tunnel you are talking about. We believe it is going to have a major impact on the housing there. As recently as this morning, we are spending money rebuilding eight vacant

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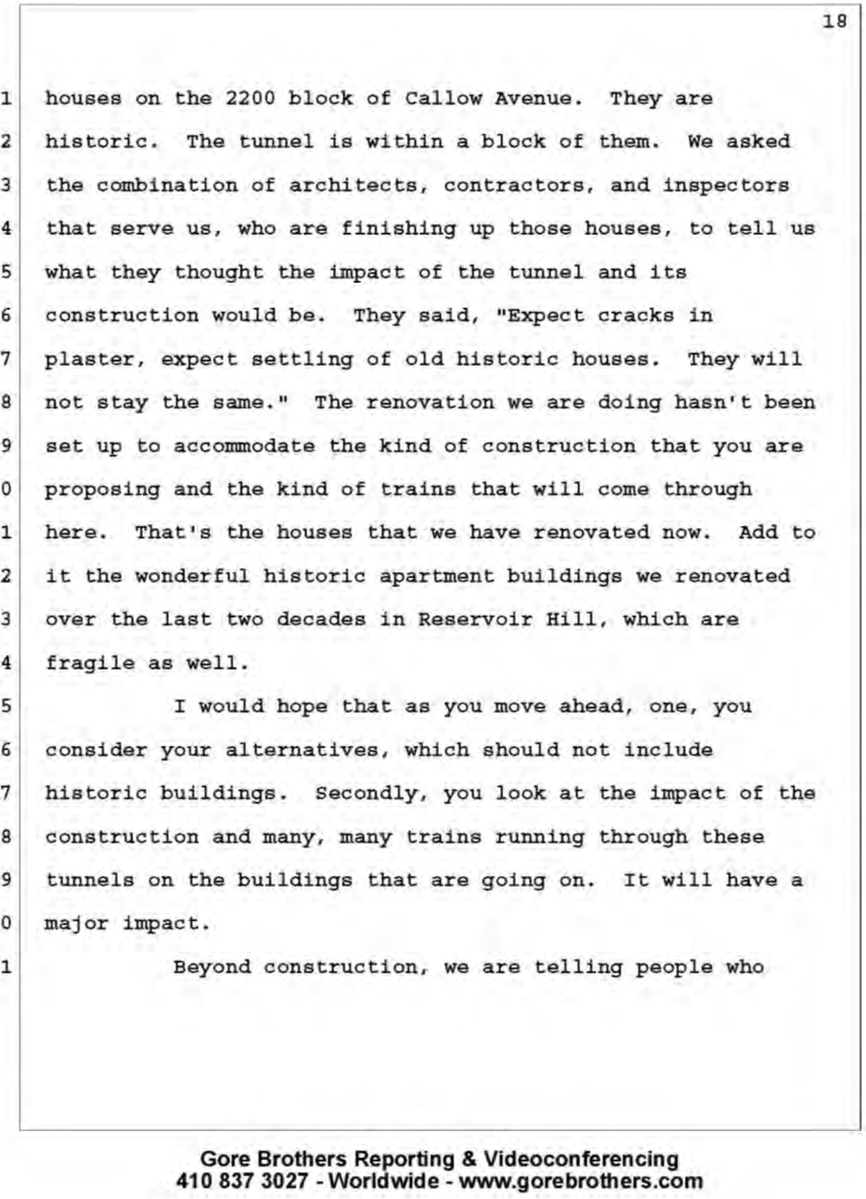
COMMENTS



18

1 houses on the 2200 block of Callow Avenue. They are historic. The tunnel is within a block of them. We asked the combination of architects, contractors, and inspectors that serve us, who are finishing up those houses, to tell us what they thought the impact of the tunnel and its construction would be. They said, "Expect cracks in plaster, expect settling of old historic houses. They will not stay the same." The renovation we are doing hasn't been set up to accommodate the kind of construction that you are proposing and the kind of trains that will come through here. That's the houses that we have renovated now. Add to it the wonderful historic apartment buildings we renovated over the last two decades in Reservoir Hill, which are fragile as well.

2 I would hope that as you move ahead, one, you consider your alternatives, which should not include historic buildings. Secondly, you look at the impact of the construction and many, many trains running through these tunnels on the buildings that are going on. It will have a major impact.

Beyond construction, we are telling people who

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RESPONSES

Response to Comment 1:

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA's *Transit Noise and Vibration Impact Assessment*, and construction vibration levels were also evaluated using both FTA guidelines and standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

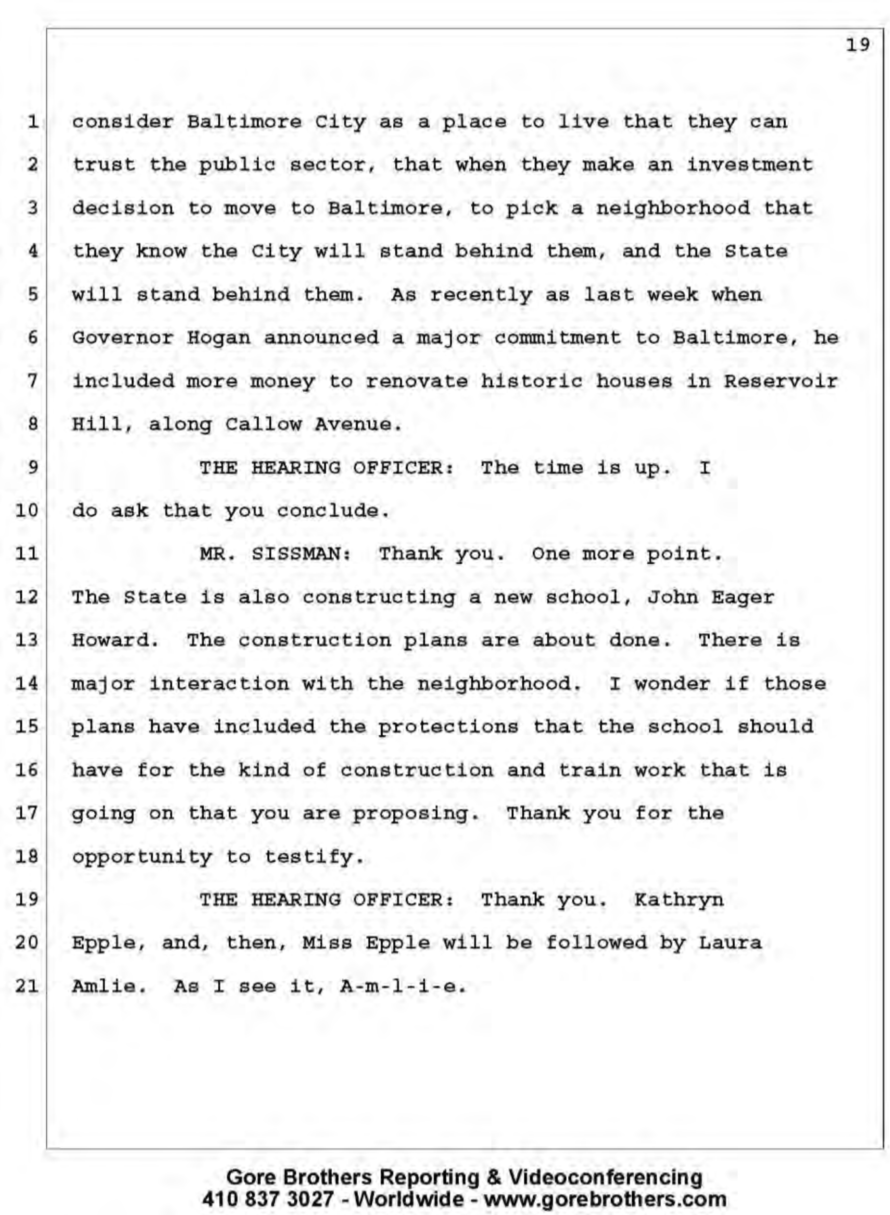
Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI**.

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses,

COMMENTS



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consider Baltimore City as a place to live that they can trust the public sector, that when they make an investment decision to move to Baltimore, to pick a neighborhood that they know the City will stand behind them, and the State will stand behind them. As recently as last week when Governor Hogan announced a major commitment to Baltimore, he included more money to renovate historic houses in Reservoir Hill, along Callow Avenue.

THE HEARING OFFICER: The time is up. I do ask that you conclude.

MR. SISSMAN: Thank you. One more point.

3 The State is also constructing a new school, John Eager Howard. The construction plans are about done. There is major interaction with the neighborhood. I wonder if those plans have included the protections that the school should have for the kind of construction and train work that is going on that you are proposing. Thank you for the opportunity to testify.

THE HEARING OFFICER: Thank you. Kathryn Epple, and, then, Miss Epple will be followed by Laura Amlie. As I see it, A-m-l-i-e.

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RESPONSES

including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be compensated for the cost of repairs.

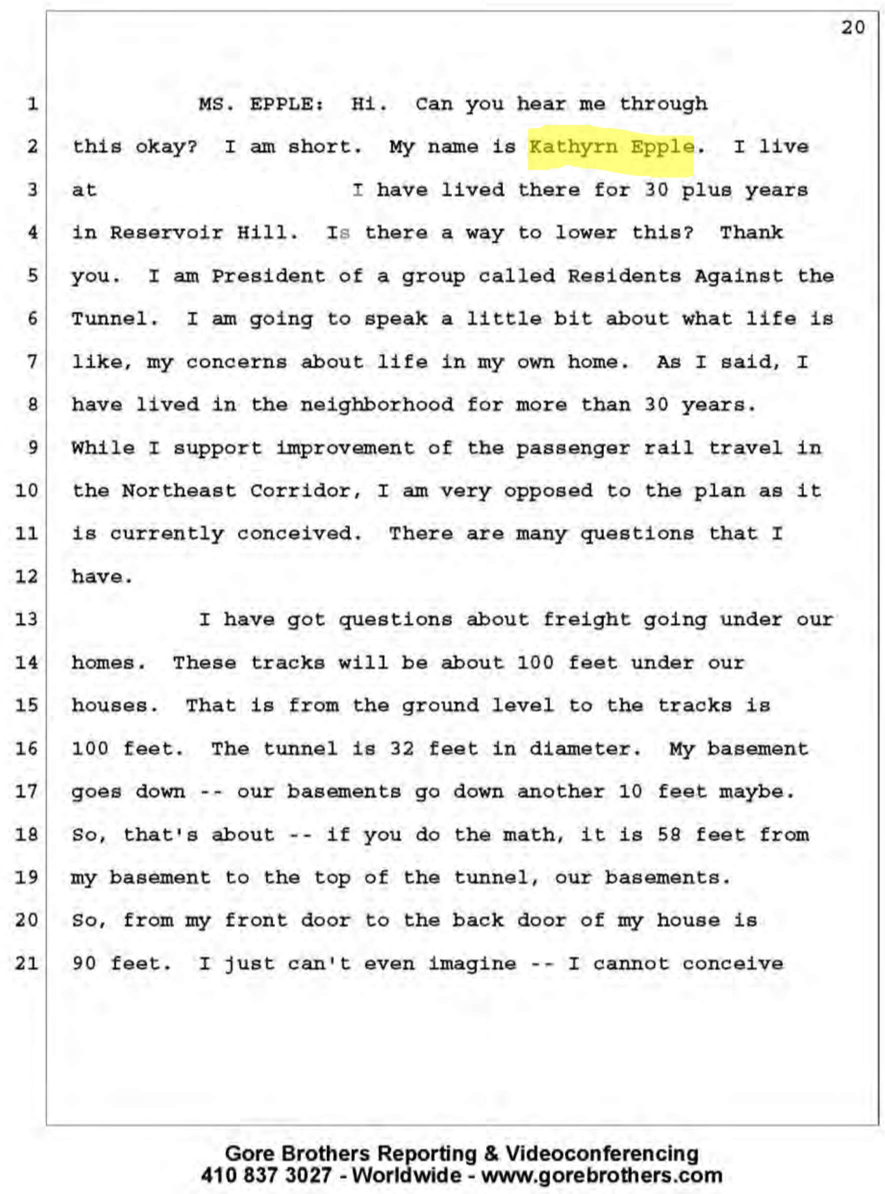
Response to Comment 2:
A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Response to Comment 3:
Chapter VI of this FEIS specifically reviewed Air Quality, Water, Soil, and Hazardous Material impacts on Children's Health. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation facilities would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

COMMENTS

DEIS Comment 107:



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MS. EPPLE: Hi. Can you hear me through this okay? I am short. My name is Kathyrn Epple. I live at I have lived there for 30 plus years in Reservoir Hill. Is there a way to lower this? Thank you. I am President of a group called Residents Against the Tunnel. I am going to speak a little bit about what life is like, my concerns about life in my own home. As I said, I have lived in the neighborhood for more than 30 years. While I support improvement of the passenger rail travel in the Northeast Corridor, I am very opposed to the plan as it is currently conceived. There are many questions that I have.

1 I have got questions about freight going under our homes. These tracks will be about 100 feet under our houses. That is from the ground level to the tracks is 100 feet. The tunnel is 32 feet in diameter. My basement goes down -- our basements go down another 10 feet maybe. So, that's about -- if you do the math, it is 58 feet from my basement to the top of the tunnel, our basements. So, from my front door to the back door of my house is 90 feet. I just can't even imagine -- I cannot conceive

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RESPONSES

Response to Comment 1:
The build alternatives will have an average depth of 115 feet.

The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces on rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

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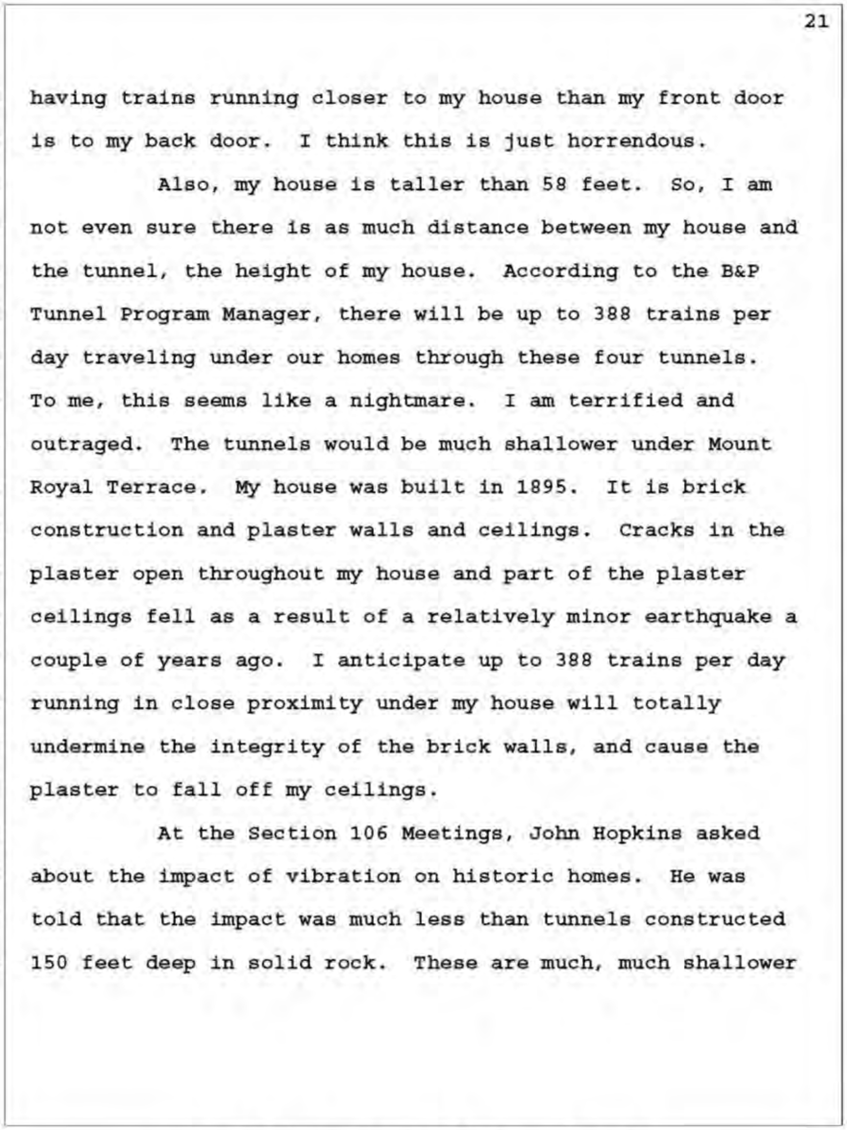

having trains running closer to my house than my front door is to my back door. I think this is just horrendous.

Also, my house is taller than 58 feet. So, I am not even sure there is as much distance between my house and the tunnel, the height of my house. According to the B&P Tunnel Program Manager, there will be up to 388 trains per day traveling under our homes through these four tunnels. To me, this seems like a nightmare. I am terrified and outraged. The tunnels would be much shallower under Mount

2 Royal Terrace. My house was built in 1895. It is brick construction and plaster walls and ceilings. Cracks in the plaster open throughout my house and part of the plaster ceilings fell as a result of a relatively minor earthquake a couple of years ago. I anticipate up to 388 trains per day running in close proximity under my house will totally undermine the integrity of the brick walls, and cause the plaster to fall off my ceilings.

3 At the Section 106 Meetings, John Hopkins asked about the impact of vibration on historic homes. He was told that the impact was much less than tunnels constructed 150 feet deep in solid rock. These are much, much shallower

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RESPONSES

Response to Comment 2:
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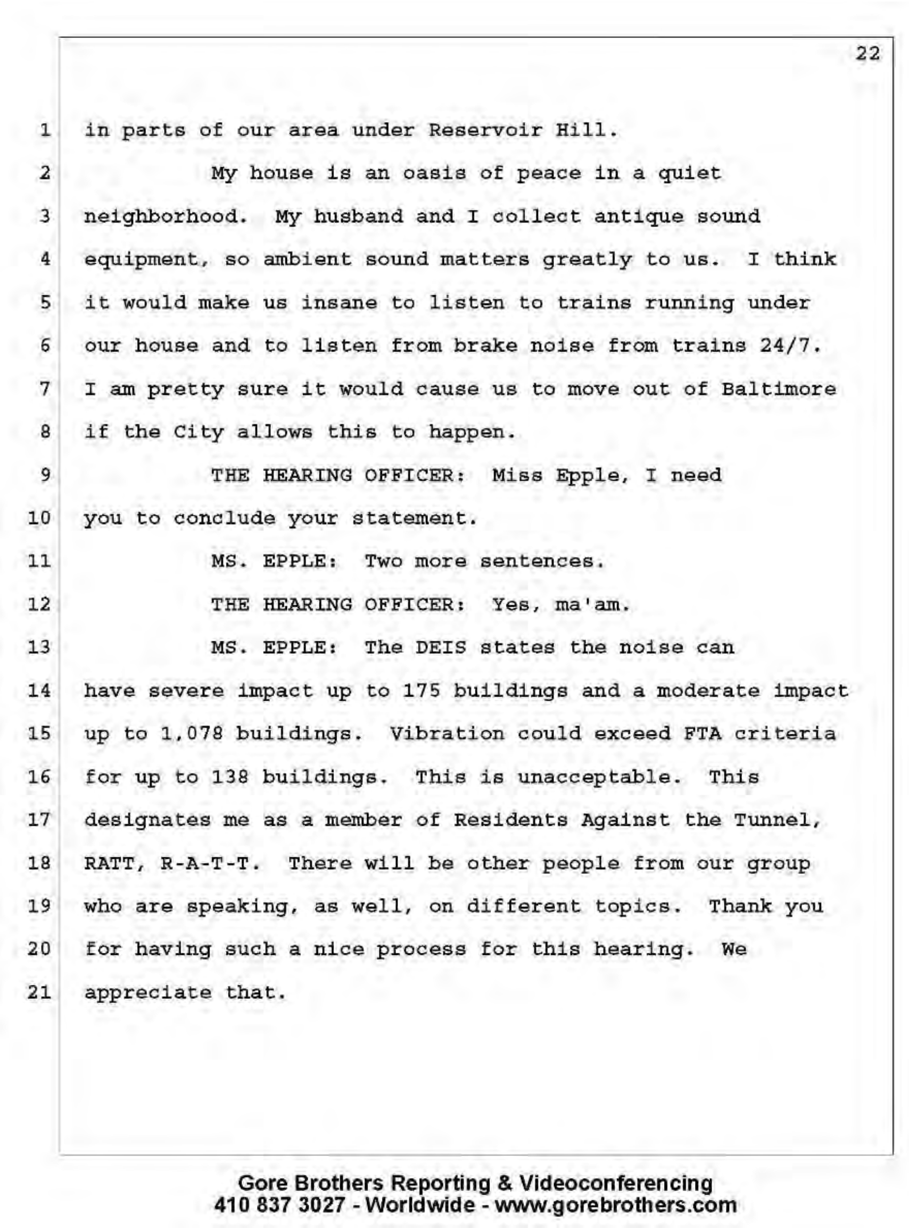

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in parts of our area under Reservoir Hill.

4 My house is an oasis of peace in a quiet neighborhood. My husband and I collect antique sound equipment, so ambient sound matters greatly to us. I think it would make us insane to listen to trains running under our house and to listen from brake noise from trains 24/7. I am pretty sure it would cause us to move out of Baltimore if the City allows this to happen.

THE HEARING OFFICER: Miss Epple, I need you to conclude your statement.

MS. EPPLE: Two more sentences.

THE HEARING OFFICER: Yes, ma'am.

MS. EPPLE: The DEIS states the noise can have severe impact up to 175 buildings and a moderate impact up to 1,078 buildings. Vibration could exceed FTA criteria for up to 138 buildings. This is unacceptable. This designates me as a member of Residents Against the Tunnel, RATT, R-A-T-T. There will be other people from our group who are speaking, as well, on different topics. Thank you for having such a nice process for this hearing. We appreciate that.

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RESPONSES

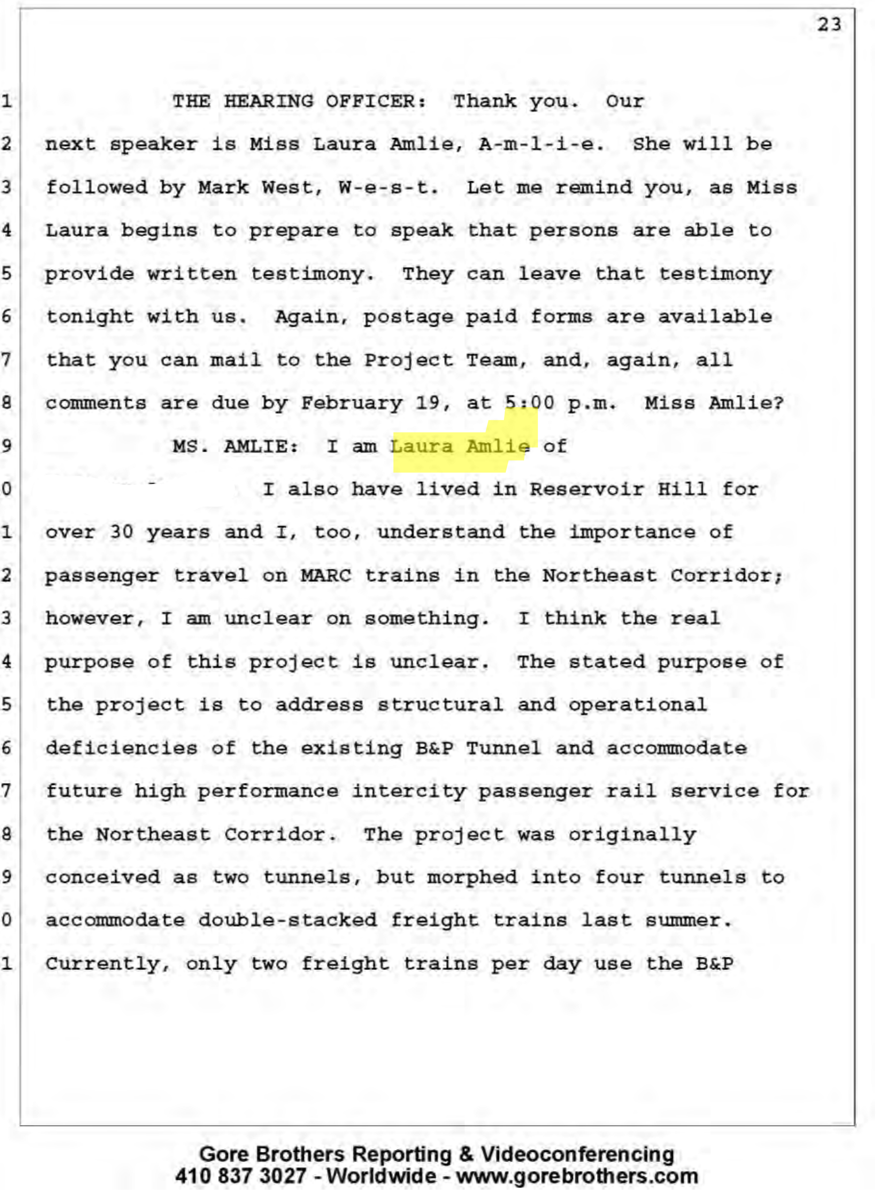
air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

Response to Comment 4:
The Project Team has performed an impact analysis for noise following the Federal Transit Administration’s guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include Vehicle Skirts, Undercar Absorption, Spring Frogs, Acquisition of a Buffer Zone, among others, which are documented in this FEIS.

COMMENTS

DEIS Comment 108:



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THE HEARING OFFICER: Thank you. Our next speaker is Miss Laura Amlie, A-m-l-i-e. She will be followed by Mark West, W-e-s-t. Let me remind you, as Miss Laura begins to prepare to speak that persons are able to provide written testimony. They can leave that testimony tonight with us. Again, postage paid forms are available that you can mail to the Project Team, and, again, all comments are due by February 19, at 5:00 p.m. Miss Amlie?

MS. AMLIE: I am Laura Amlie of

I also have lived in Reservoir Hill for over 30 years and I, too, understand the importance of passenger travel on MARC trains in the Northeast Corridor;

1 however, I am unclear on something. I think the real purpose of this project is unclear. The stated purpose of the project is to address structural and operational deficiencies of the existing B&P Tunnel and accommodate future high performance intercity passenger rail service for

2 the Northeast Corridor. The project was originally conceived as two tunnels, but morphed into four tunnels to accommodate double-stacked freight trains last summer.

Currently, only two freight trains per day use the B&P

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RESPONSES

Response to Comment 1:
The Purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, which include:

- Reducing travel time through the B&P Tunnel and along the NEC,
- Accommodating existing and projected travel demand for intercity and commuter passenger services,
- Eliminating impediments to existing and projected operations along the NEC, and
- Providing operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

Response to Comment 2:
The Northeast Corridor (NEC) faces serious challenges to meet current and projected travel demand. Responding to these pressing issues, the FRA initiated the NEC FUTURE Environmental Impact Statement as a comprehensive planning process for future investment in the corridor. The NEC FUTURE identified the B&P Tunnel as one of the segments along the NEC that faces capacity constraints and reliability challenges due to multiple chokepoints and state-of-good-repair needs.

Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

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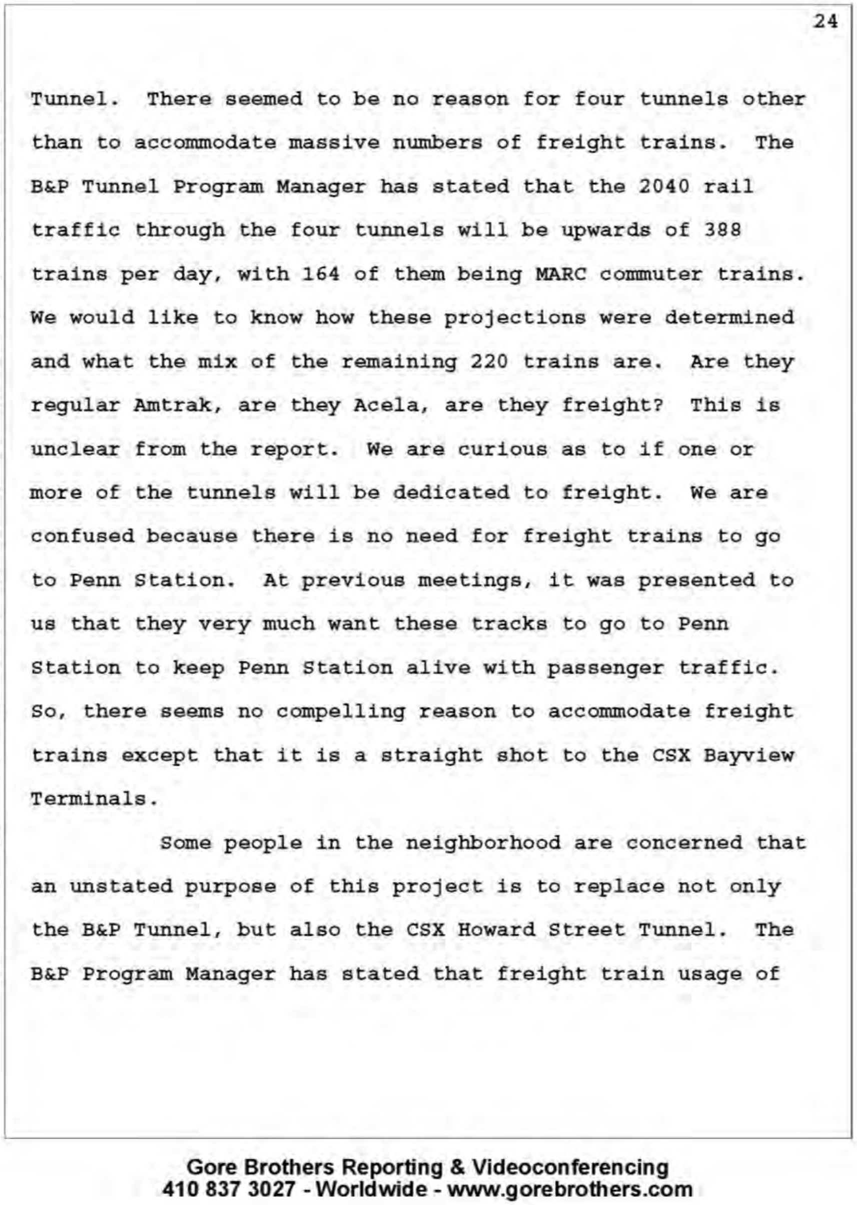

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Tunnel. There seemed to be no reason for four tunnels other than to accommodate massive numbers of freight trains. The B&P Tunnel Program Manager has stated that the 2040 rail traffic through the four tunnels will be upwards of 388 trains per day, with 164 of them being MARC commuter trains. We would like to know how these projections were determined and what the mix of the remaining 220 trains are. Are they regular Amtrak, are they Acela, are they freight? This is unclear from the report. We are curious as to if one or more of the tunnels will be dedicated to freight. We are confused because there is no need for freight trains to go to Penn Station. At previous meetings, it was presented to us that they very much want these tracks to go to Penn Station to keep Penn Station alive with passenger traffic. So, there seems no compelling reason to accommodate freight trains except that it is a straight shot to the CSX Bayview Terminals.

Some people in the neighborhood are concerned that an unstated purpose of this project is to replace not only the B&P Tunnel, but also the CSX Howard Street Tunnel. The B&P Program Manager has stated that freight train usage of

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RESPONSES

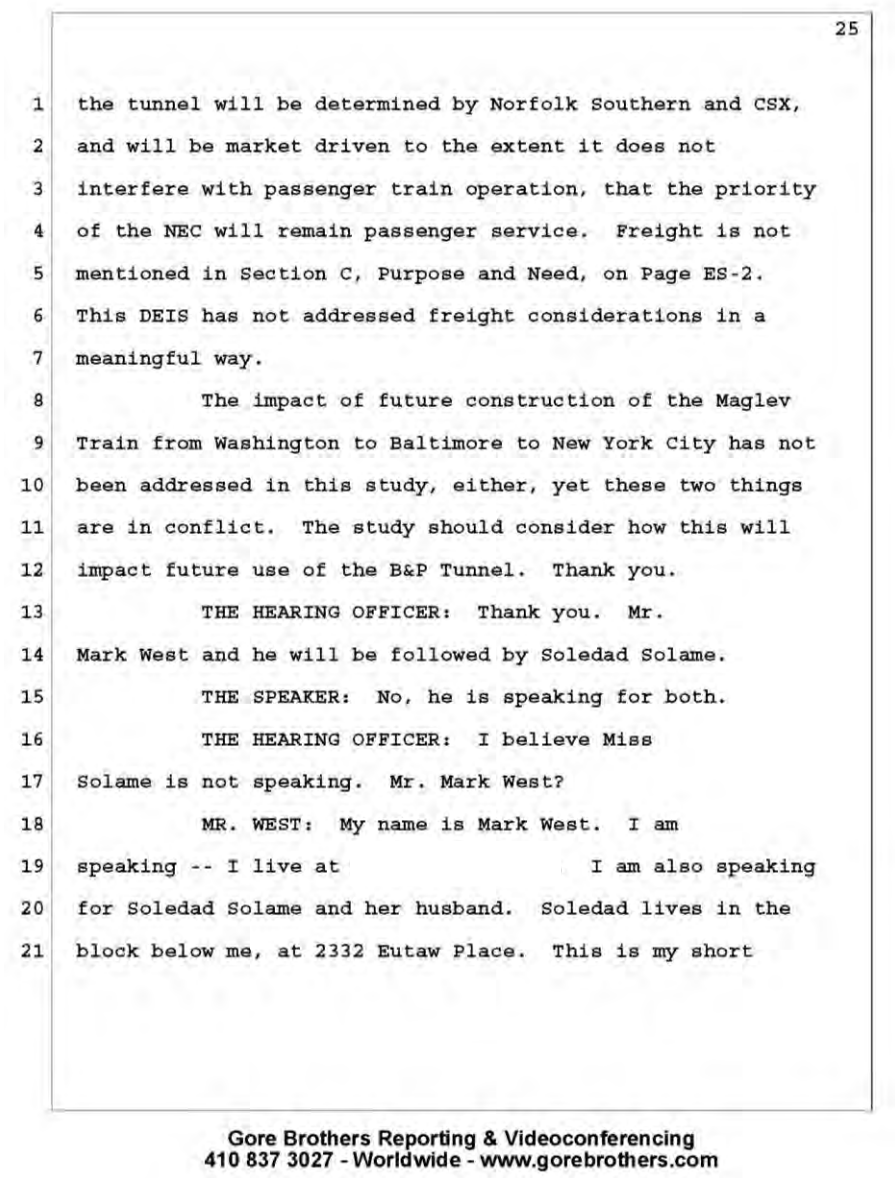
Response to Comment 3:

The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. As stated, Norfolk Southern (NS) currently operates two trains through the existing B&P Tunnel daily for freight purposes.

As described in **Chapter VI** (Air Quality) of this FEIS, tunnel operating characteristics in the Build Year 2040 would total 388 daily bi-directional frequencies. 164 of them would be MARC commuter trains, 82 of them would be Acela Intercity Express, 48 would be NE Regional, 92 would be Metropolitan and 2 would be Freight. Please refer to **Chapter VI** for additional information.

COMMENTS



the tunnel will be determined by Norfolk Southern and CSX, and will be market driven to the extent it does not interfere with passenger train operation, that the priority of the NEC will remain passenger service. Freight is not mentioned in Section C, Purpose and Need, on Page ES-2. This DEIS has not addressed freight considerations in a meaningful way.

4 The impact of future construction of the Maglev Train from Washington to Baltimore to New York City has not been addressed in this study, either, yet these two things are in conflict. The study should consider how this will impact future use of the B&P Tunnel. Thank you.

THE HEARING OFFICER: Thank you. Mr. Mark West and he will be followed by Soledad Solame.

THE SPEAKER: No, he is speaking for both.

THE HEARING OFFICER: I believe Miss Solame is not speaking. Mr. Mark West?

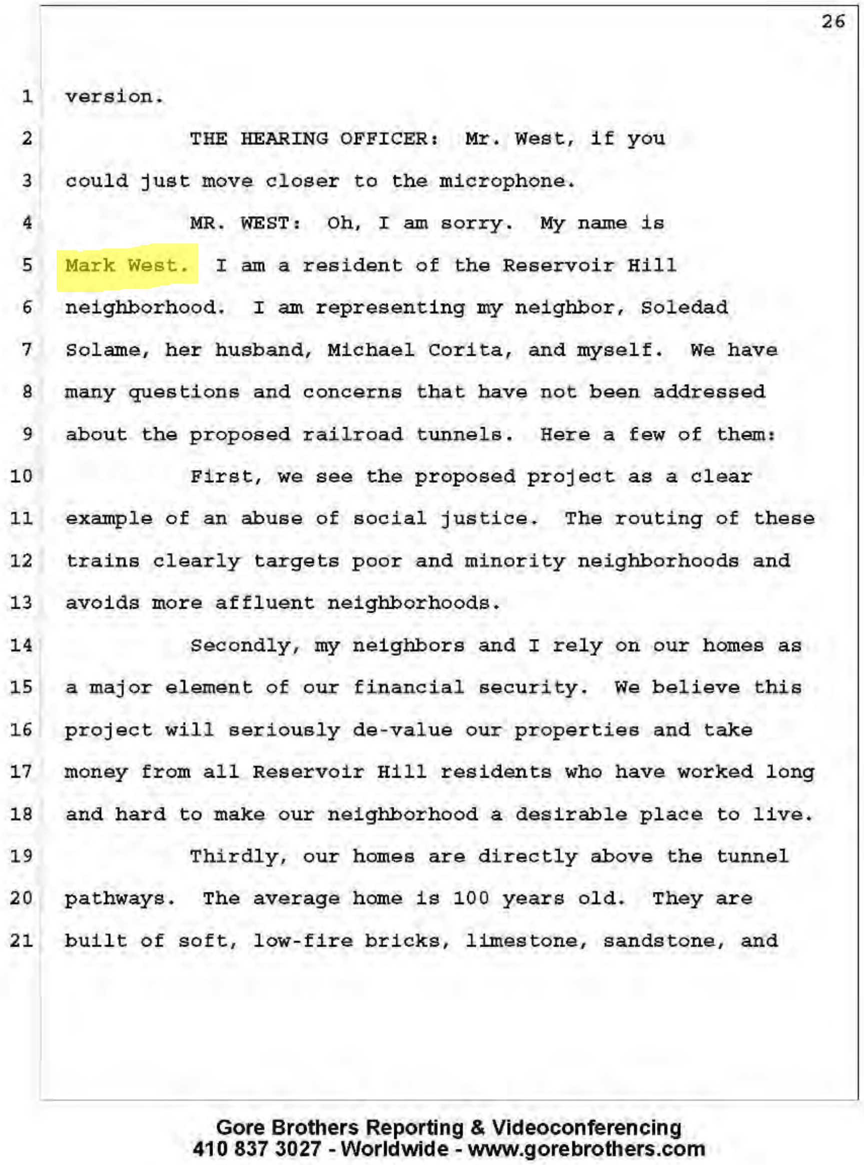
MR. WEST: My name is Mark West. I am speaking -- I live at I am also speaking for Soledad Solame and her husband. Soledad lives in the block below me, at 2332 Eutaw Place. This is my short

RESPONSES

Response to Comment 4:
Future concept development of the Maglev train is beyond the purview of the Project. However, the Maryland portion of the NEC serves a large population whose travel needs would not be met with the Maglev train. Amtrak and MARC trains make more local stops between Washington, DC and Baltimore than is being proposed for Maglev.

COMMENTS

DEIS Comment 109:



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version.

THE HEARING OFFICER: Mr. West, if you could just move closer to the microphone.

MR. WEST: Oh, I am sorry. My name is Mark West. I am a resident of the Reservoir Hill neighborhood. I am representing my neighbor, Soledad Solame, her husband, Michael Corita, and myself. We have many questions and concerns that have not been addressed about the proposed railroad tunnels. Here a few of them:

1 First, we see the proposed project as a clear example of an abuse of social justice. The routing of these trains clearly targets poor and minority neighborhoods and avoids more affluent neighborhoods.

2 Secondly, my neighbors and I rely on our homes as a major element of our financial security. We believe this project will seriously de-value our properties and take money from all Reservoir Hill residents who have worked long and hard to make our neighborhood a desirable place to live.

3 Thirdly, our homes are directly above the tunnel pathways. The average home is 100 years old. They are built of soft, low-fire bricks, limestone, sandstone, and

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RESPONSES

Response to Comment 1:
A thorough analysis of alternatives was conducted prior to the select of Alternative 3B as the Preferred Alternative. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15 and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative, and **Chapter IV** provides further justification for the selection of Alternative 3B as the Preferred Alternative.

The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

Response to Comment 2:
The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Response to Comment 3:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property

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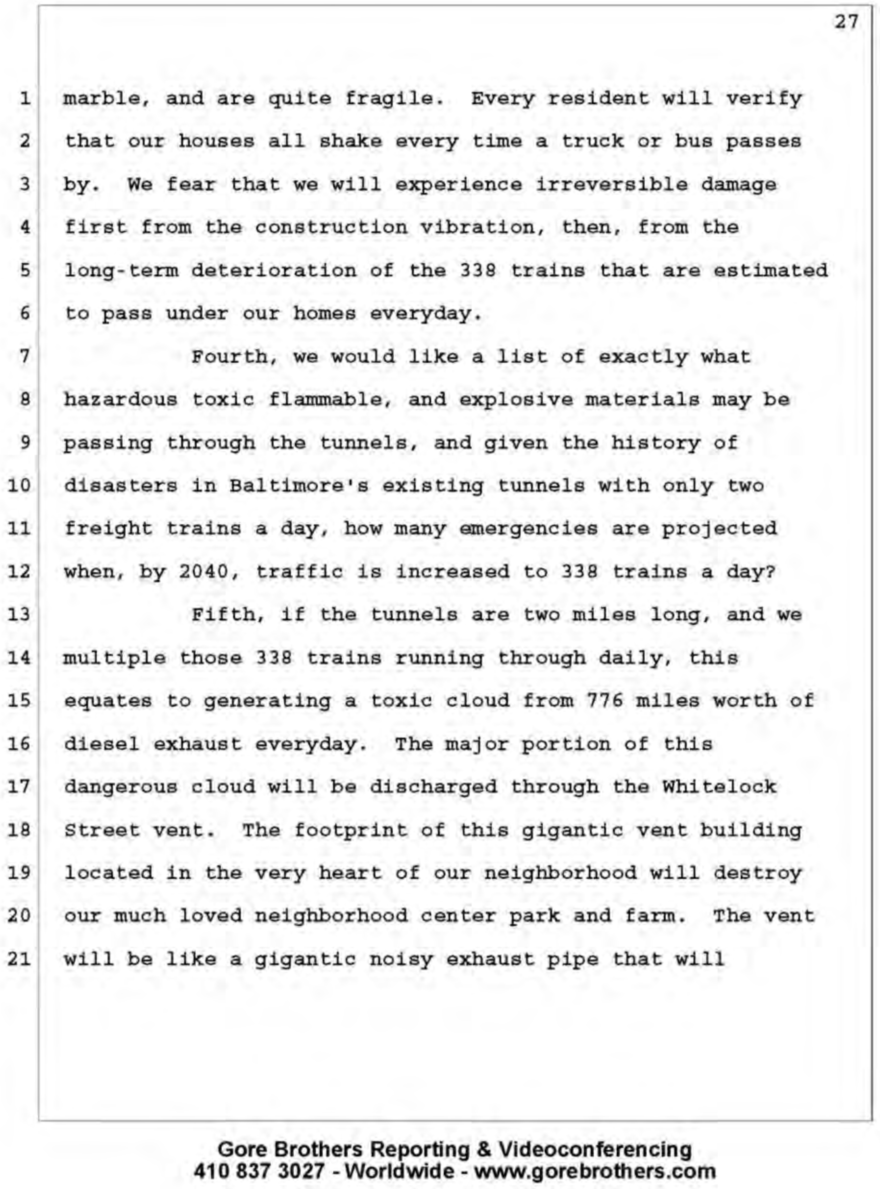

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3 marble, and are quite fragile. Every resident will verify that our houses all shake every time a truck or bus passes by. We fear that we will experience irreversible damage first from the construction vibration, then, from the long-term deterioration of the 338 trains that are estimated to pass under our homes everyday.

4 Fourth, we would like a list of exactly what hazardous toxic flammable, and explosive materials may be passing through the tunnels, and given the history of disasters in Baltimore's existing tunnels with only two freight trains a day, how many emergencies are projected when, by 2040, traffic is increased to 338 trains a day?

5 Fifth, if the tunnels are two miles long, and we multiple those 338 trains running through daily, this equates to generating a toxic cloud from 776 miles worth of diesel exhaust everyday. The major portion of this dangerous cloud will be discharged through the Whitelock Street vent. The footprint of this gigantic vent building located in the very heart of our neighborhood will destroy our much loved neighborhood center park and farm. The vent will be like a gigantic noisy exhaust pipe that will

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RESPONSES

owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be compensated for the cost of repairs.

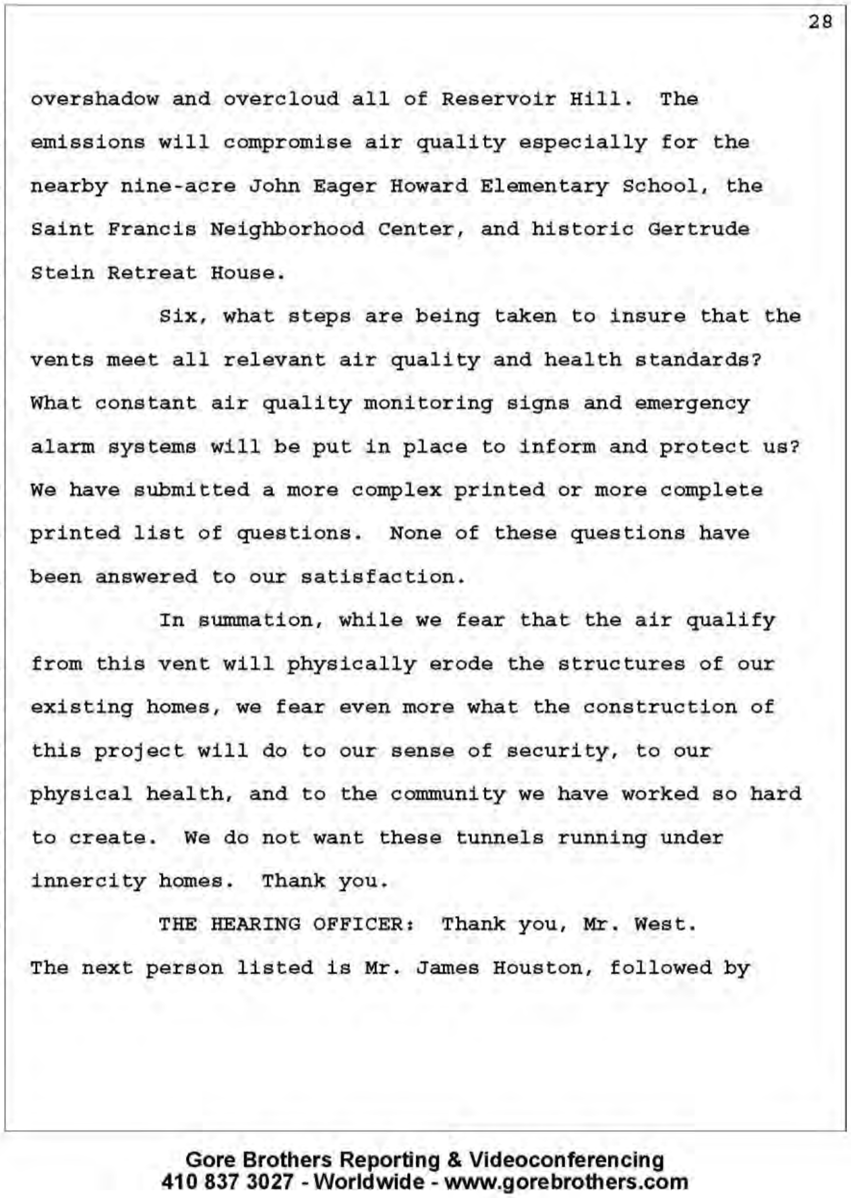
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

COMMENTS



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5 overshadow and overcloud all of Reservoir Hill. The emissions will compromise air quality especially for the nearby nine-acre John Eager Howard Elementary School, the Saint Francis Neighborhood Center, and historic Gertrude Stein Retreat House.

6 Six, what steps are being taken to insure that the vents meet all relevant air quality and health standards? What constant air quality monitoring signs and emergency alarm systems will be put in place to inform and protect us? We have submitted a more complex printed or more complete printed list of questions. None of these questions have been answered to our satisfaction.

7 In summation, while we fear that the air qualify from this vent will physically erode the structures of our existing homes, we fear even more what the construction of this project will do to our sense of security, to our physical health, and to the community we have worked so hard to create. We do not want these tunnels running under innercity homes. Thank you.

THE HEARING OFFICER: Thank you, Mr. West. The next person listed is Mr. James Houston, followed by

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RESPONSES

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI**

Response to Comment 4:
For the past several years, only one local freight train (Norfolk Southern) has been operating through the B&P Tunnel daily, serving customers south of the B&P Tunnel between Baltimore and Washington, DC. Currently, cargo to/from specific railroad customers of the freight trains that pass through the B&P Tunnel include vegetable oil, plastic pellets, paper, lumber, and produce. However, there are no regulations or restrictions which would preclude other forms of freight cargo on these trains, providing the material is moved in accordance with federal transportation rules.

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Response to Comment 5:
Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project

COMMENTS | **RESPONSES**

Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am to 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

Analysis of ventilation facility emissions included an air dispersion modeling analysis, which followed the latest US Environmental Protection Agency modeling guidelines for predicting air quality effects for regulated pollutants. The results of the analysis were compared to the stringent 1-hour NO_2 National Ambient Air Quality Standards (NAAQS) of 100 parts per billion (ppb) as opposed to the annual standard of 53 ppb. Emission studies have demonstrated that if NO_2 concentrations are maintained within acceptable levels, then other pollutant concentrations associated with diesel exhaust emissions will also be within acceptable limits. The maximum predicted 1-hour NO_2 concentration from the three ventilation facilities as well as north and south portals was 12.8 ppb. When added to the NO_2 background concentration of 51 ppb, the total predicted 1-hour concentration amounted to 63.8 ppb, which is below the NAAQS of 100 ppb. The maximum predicted 1-hour NO_2 concentration of the Intermediate Ventilation Facility is 2.9 ppb and when combined with NO_2 background concentration of 51 ppb the total NO_2 concentration would be 53.9 ppb, below the NAAQS threshold limits of 100 ppb.

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock

COMMENTS	RESPONSES

Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Children's Health was assessed for Air Quality, Water, Soil and Hazardous Material and is described in **Chapter VI** of this FEIS. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA. No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water. Under the Preferred Alternative, 112 sites of concern were identified within 1 mile of the alignment; once type and extent of contamination and details of construction are known, potential risk and exposure can be assessed and appropriate documentation in place.

Response to Comment 6:
The Project meets air quality standards; therefore, public alerts regarding emissions will not be required. An air quality alarm would not be appropriate given that the Project meets federal standards. However, in the event of an emergency, local first responders would assist in evacuation.

To prevent accidents and fires, FRA requires a range of measures that minimize the risk to the public, including emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA).

The ventilation facilities would be an essential Life/Safety component of the build alternatives, beyond their function of providing emergency access/egress for the tunnels. The ventilation facilities would include an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, and silencers and dampers. In the unlikely event of a fire, smoke could emerge from the vents,

COMMENTS **RESPONSES**

as is the case with any structural fire. The ventilation facilities and fans are built so that smoke emerging from the Tunnel would be projected up and away from the community.

The three ventilation facilities would be subject to the operational noise level standards included in the Noise Regulation of the Health Code of Baltimore City § 9-206 Noise Regulation, 2015. This regulation provides the noise limits for manufacturing, commercial, and residential zones in Baltimore City– depending on the source of noise and the types of adjacent land uses. For noise generated within residential zones, there is a limit of 55 dBA at any point on the property line of the use.

Noise levels in the immediate vicinity of the ventilation facility buildings would be caused by the continual operation of the ventilation fans within each facility. The horizontal fans would operate periodically and would generate sound that would propagate through the louvers at the top of the ventilation facility buildings. Fans would operate periodically when NO_2 levels in the tunnel exceed a set threshold or in emergencies when smoke is present in the tunnel. NO_2 levels are likely to be highest when the level of diesel locomotive operations is highest, or when congestion causes trains to operate slowly or to idle in the tunnel. However, there is not enough information currently available to determine how many hours per day, on average, the fans would run and whether or not they would run during the night.

The design standard for the ventilation facilties would limit the outdoor noise level, when the fans are in operation, to L_{max} 50 dBA at the facility property lines. 50 dBA is approximately the noise produced by an indoor air conditioner at a distance of three feet.

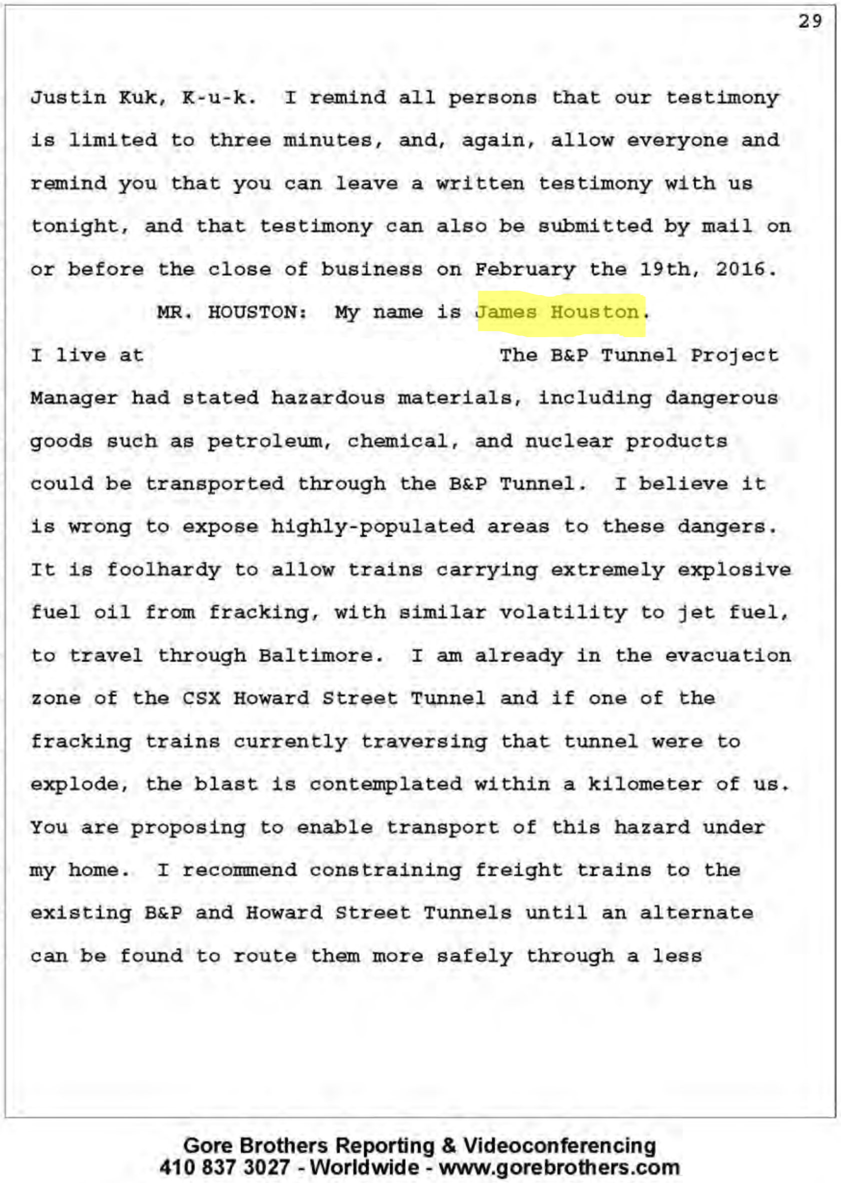
To achieve the required reduction in noise level, cylindrical or rectangular sound attenuators would be mounted directly to each fan or to the ductwork within the system. In addition, the building itself would partially shield noise from the interior of the ventilation facility, which would further reduce noise levels outside of the building. The Preliminary Engineering Team has stated that the ventilation facilities, with attenuators installed, will emit noise at 45 dBA. This would meet the design standard of L_{max} 50 dBA at the facility property lines (i.e., the noise level generated would be less than the design standard).

Please refer to responses to **DEIS Comment #85** for responses to the RATT questions.

Response to Comment 7:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

DEIS Comment 110:



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Justin Kuk, K-u-k. I remind all persons that our testimony
is limited to three minutes, and, again, allow everyone and
remind you that you can leave a written testimony with us
tonight, and that testimony can also be submitted by mail on
or before the close of business on February the 19th, 2016.
MR. HOUSTON: My name is James Houston.
I live at The B&P Tunnel Project
1 Manager had stated hazardous materials, including dangerous
goods such as petroleum, chemical, and nuclear products
could be transported through the B&P Tunnel. I believe it
is wrong to expose highly-populated areas to these dangers.
It is foolhardy to allow trains carrying extremely explosive
fuel oil from fracking, with similar volatility to jet fuel,
to travel through Baltimore. I am already in the evacuation
zone of the CSX Howard Street Tunnel and if one of the
fracking trains currently traversing that tunnel were to
explode, the blast is contemplated within a kilometer of us.
You are proposing to enable transport of this hazard under
2 my home. I recommend constraining freight trains to the
existing B&P and Howard Street Tunnels until an alternate
can be found to route them more safely through a less

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RESPONSES

Response to Comment 1:
Norfolk Southern has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

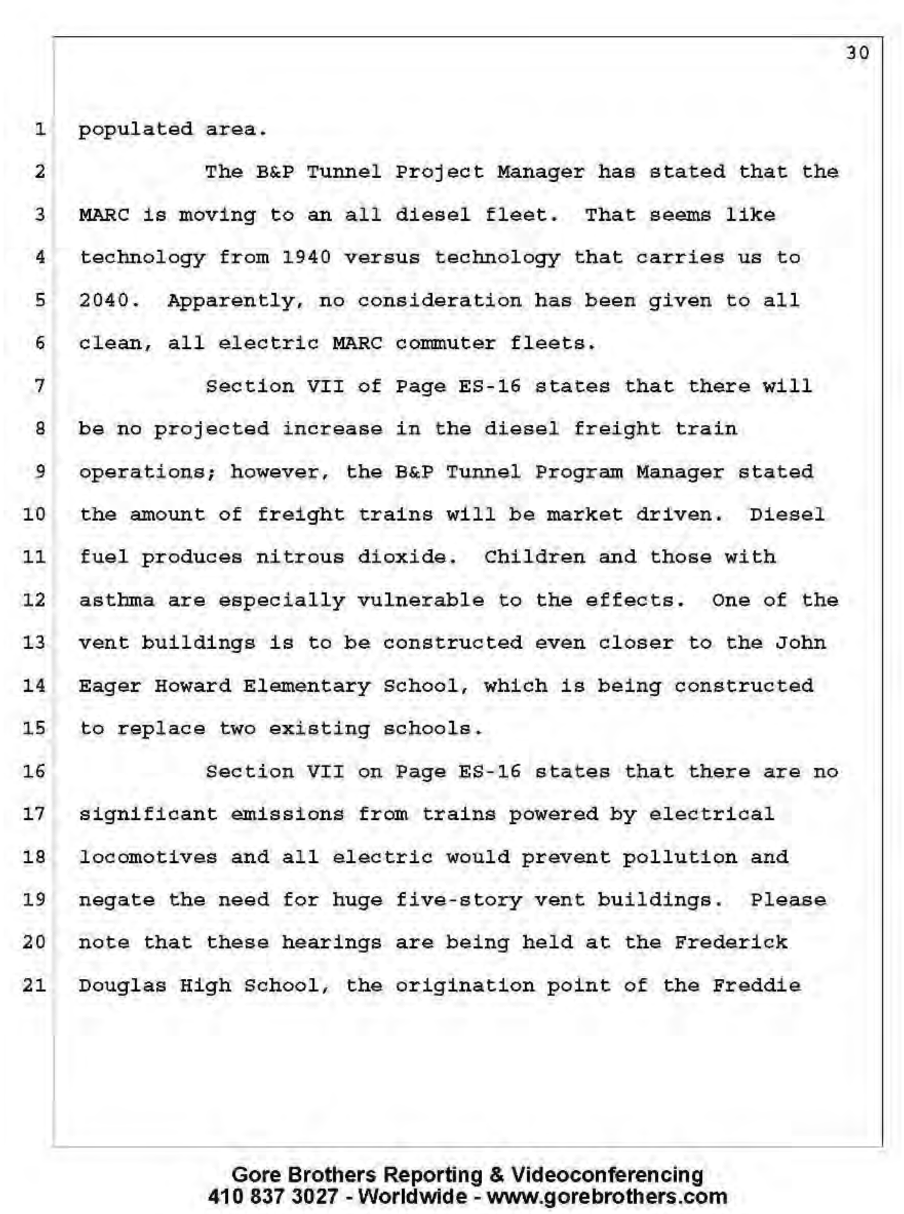
FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Response to Comment 2:
This recommendation is a policy consideration and does not address the purpose or need of the Project. The Purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, which include:

- Reducing travel time through the B&P Tunnel and along the NEC,
- Accommodating existing and projected travel demand for intercity and commuter passenger services,
- Eliminating impediments to existing and projected operations along the NEC, and
- Providing operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

COMMENTS



populated area.

The B&P Tunnel Project Manager has stated that the
MARC is moving to an all diesel fleet. That seems like
technology from 1940 versus technology that carries us to
2040. Apparently, no consideration has been given to all
clean, all electric MARC commuter fleets.

Section VII of Page ES-16 states that there will
3 be no projected increase in the diesel freight train
operations; however, the B&P Tunnel Program Manager stated
the amount of freight trains will be market driven. Diesel
4 fuel produces nitrous dioxide. Children and those with
asthma are especially vulnerable to the effects. One of the
5 vent buildings is to be constructed even closer to the John
Eager Howard Elementary School, which is being constructed
to replace two existing schools.

Section VII on Page ES-16 states that there are no
significant emissions from trains powered by electrical
locomotives and all electric would prevent pollution and
negate the need for huge five-story vent buildings. Please
note that these hearings are being held at the Frederick
Douglas High School, the origination point of the Freddie

RESPONSES

In addition, the existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

As stated above, NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service.

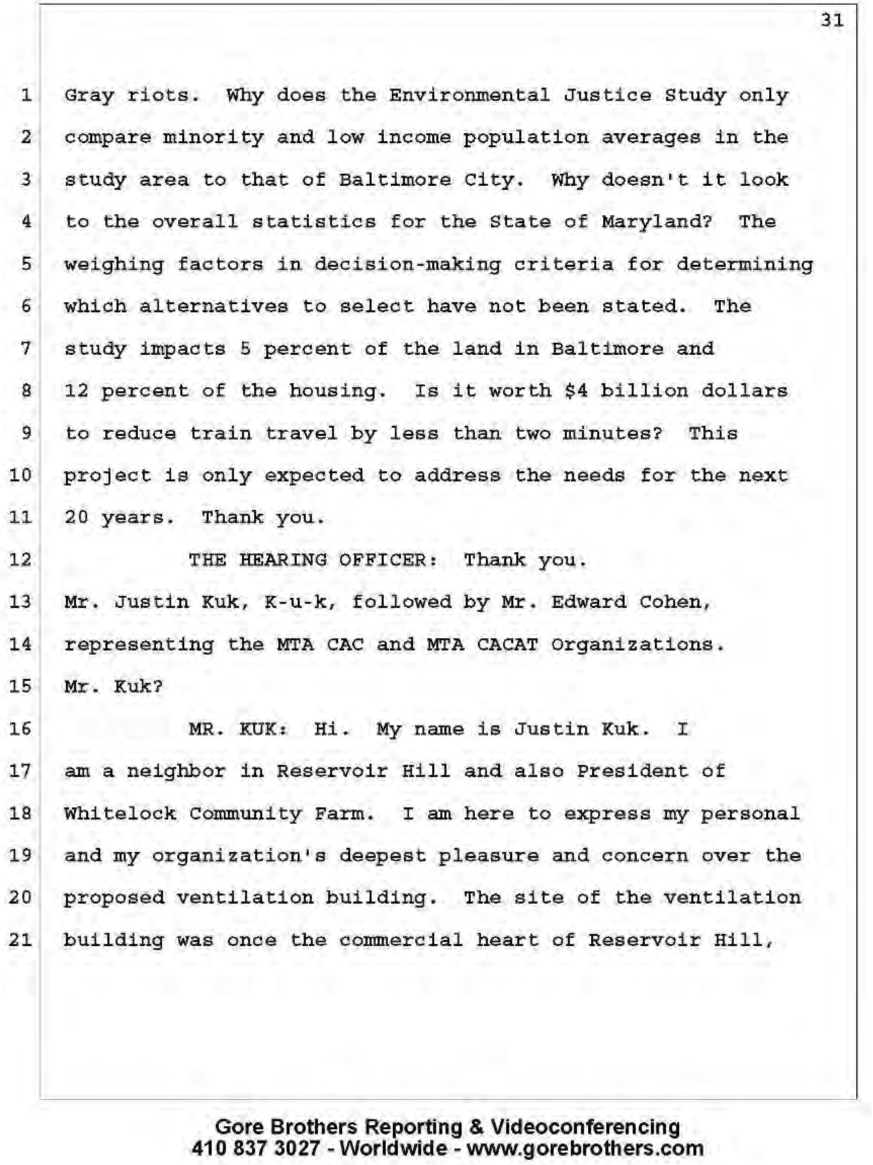
Response to Comment 3:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes.

Response to Comment 4:
Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed

COMMENTS



Gray riots. Why does the Environmental Justice Study only compare minority and low income population averages in the study area to that of Baltimore City. Why doesn't it look to the overall statistics for the State of Maryland?

6 The weighing factors in decision-making criteria for determining which alternatives to select have not been stated. The study impacts 5 percent of the land in Baltimore and 12 percent of the housing. Is it worth $4 billion dollars to reduce train travel by less than two minutes? This project is only expected to address the needs for the next 20 years. Thank you.

THE HEARING OFFICER: Thank you. Mr. Justin Kuk, K-u-k, followed by Mr. Edward Cohen, representing the MTA CAC and MTA CACAT Organizations. Mr. Kuk?

MR. KUK: Hi. My name is Justin Kuk. I am a neighbor in Reservoir Hill and also President of Whitelock Community Farm. I am here to express my personal and my organization's deepest pleasure and concern over the proposed ventilation building. The site of the ventilation building was once the commercial heart of Reservoir Hill,

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RESPONSES

assuming an average of ten diesel trains per hour operating between the hours of 6:00 am to 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO$_2$ concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**.

Chapter VI of this FEIS specifically reviewed Air Quality, Water, Soil, and Hazardous Material impacts on Children's Health. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO$_x$, VOC, and PM$_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation facilities would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

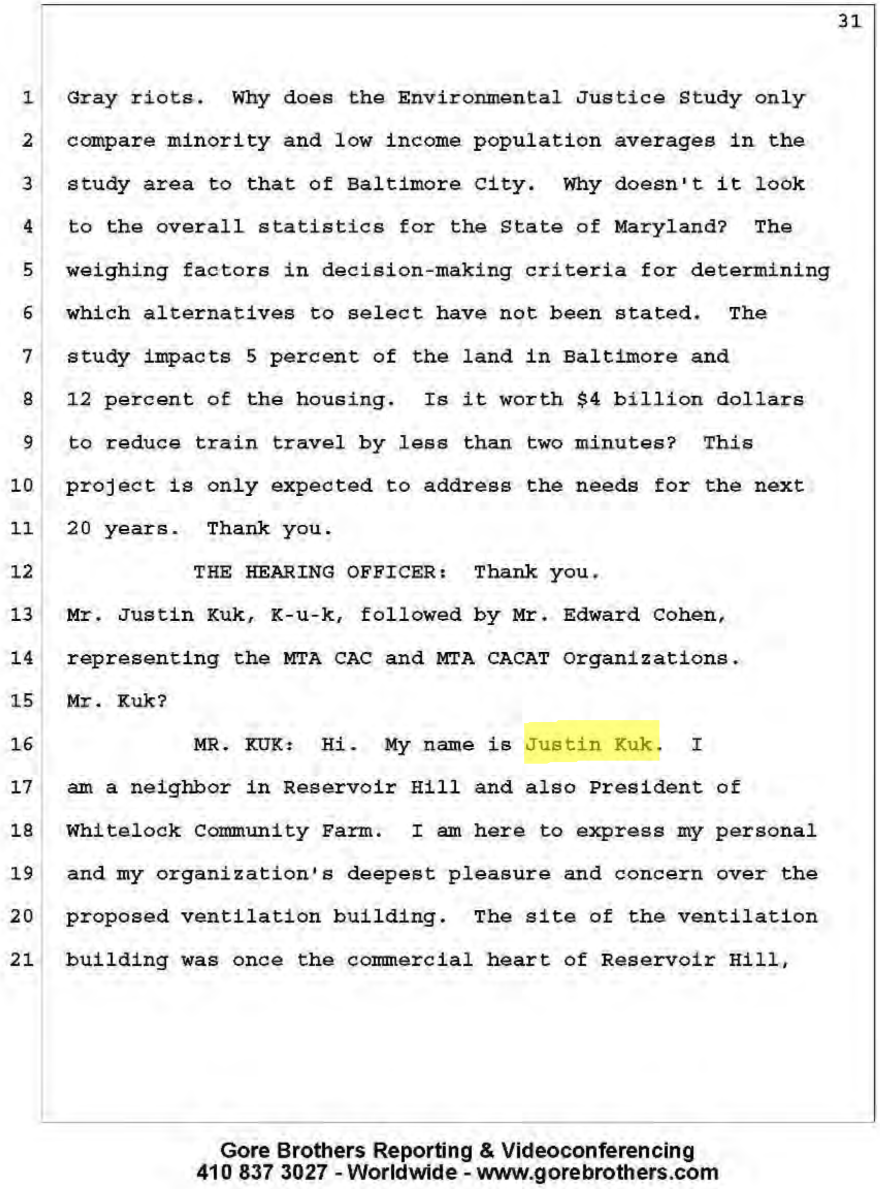
Response to Comment 5:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 6:
An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Please see **Chapter III** of the FEIS, which details the basis of elimination or retention for each alternative.

COMMENTS	RESPONSES
	While reducing travel time through the B&P Tunnel is one of several goals of the Project, it is not the reason the Project was initiated. Please refer to Response to Comment 2 for more information.

COMMENTS

DEIS Comment 111:



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Gray riots. Why does the Environmental Justice Study only compare minority and low income population averages in the study area to that of Baltimore City. Why doesn't it look to the overall statistics for the State of Maryland? The weighing factors in decision-making criteria for determining which alternatives to select have not been stated. The study impacts 5 percent of the land in Baltimore and 12 percent of the housing. Is it worth $4 billion dollars to reduce train travel by less than two minutes? This project is only expected to address the needs for the next 20 years. Thank you.

THE HEARING OFFICER: Thank you. Mr. Justin Kuk, K-u-k, followed by Mr. Edward Cohen, representing the MTA CAC and MTA CACAT Organizations. Mr. Kuk?

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MR. KUK: Hi. My name is Justin Kuk. I am a neighbor in Reservoir Hill and also President of Whitelock Community Farm. I am here to express my personal and my organization's deepest pleasure and concern over the proposed ventilation building. The site of the ventilation building was once the commercial heart of Reservoir Hill,

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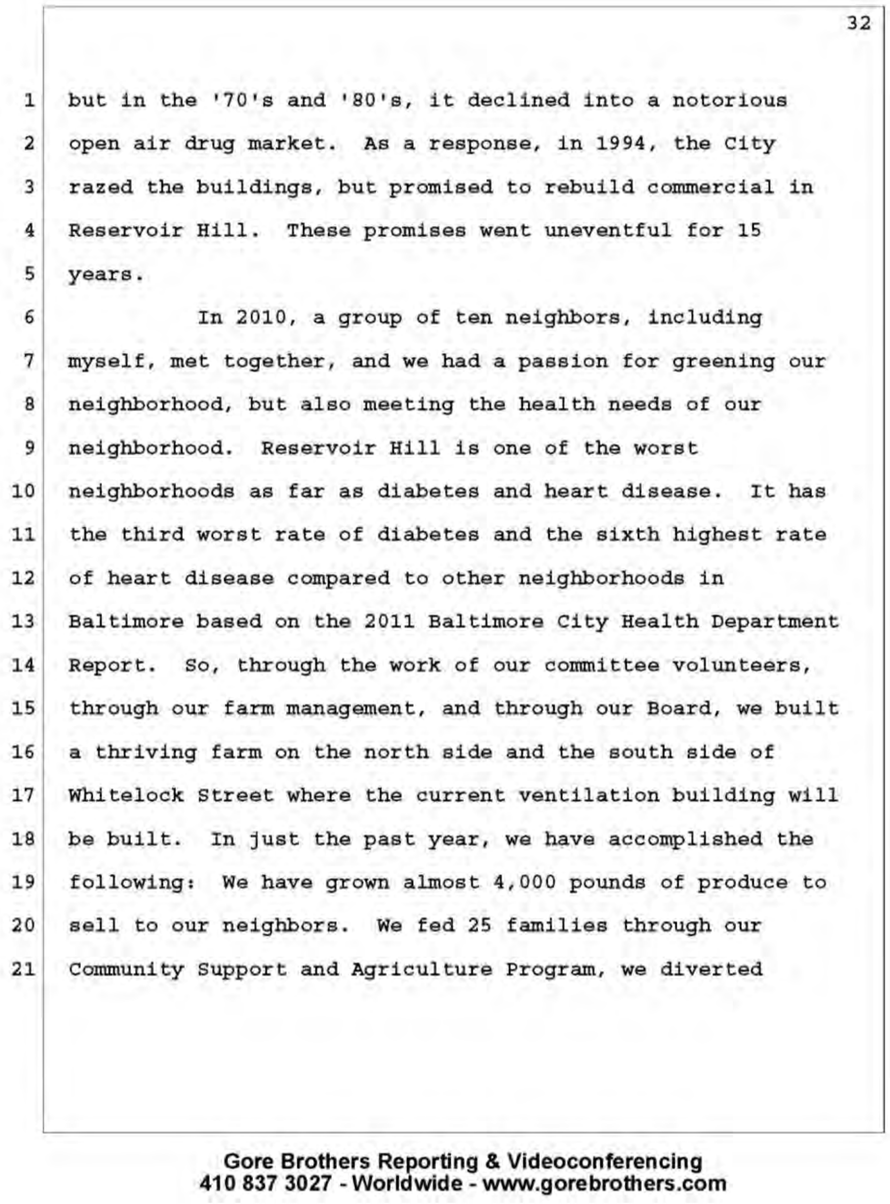
RESPONSES

Response to comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

RESPONSES

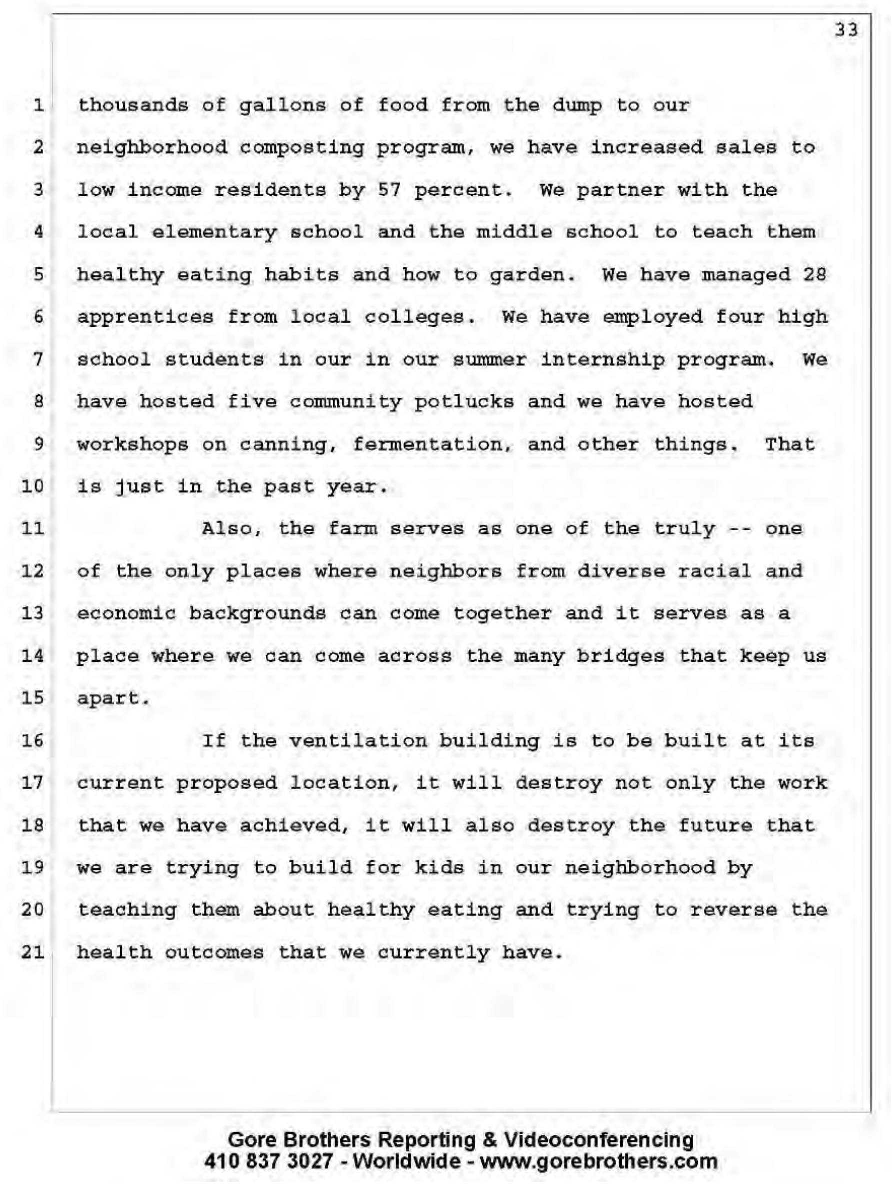


but in the '70's and '80's, it declined into a notorious open air drug market. As a response, in 1994, the City razed the buildings, but promised to rebuild commercial in Reservoir Hill. These promises went uneventful for 15 years.

In 2010, a group of ten neighbors, including myself, met together, and we had a passion for greening our neighborhood, but also meeting the health needs of our neighborhood. Reservoir Hill is one of the worst neighborhoods as far as diabetes and heart disease. It has the third worst rate of diabetes and the sixth highest rate of heart disease compared to other neighborhoods in Baltimore based on the 2011 Baltimore City Health Department Report. So, through the work of our committee volunteers, through our farm management, and through our Board, we built a thriving farm on the north side and the south side of Whitelock Street where the current ventilation building will be built. In just the past year, we have accomplished the following: We have grown almost 4,000 pounds of produce to sell to our neighbors. We fed 25 families through our Community Support and Agriculture Program, we diverted

COMMENTS

RESPONSES



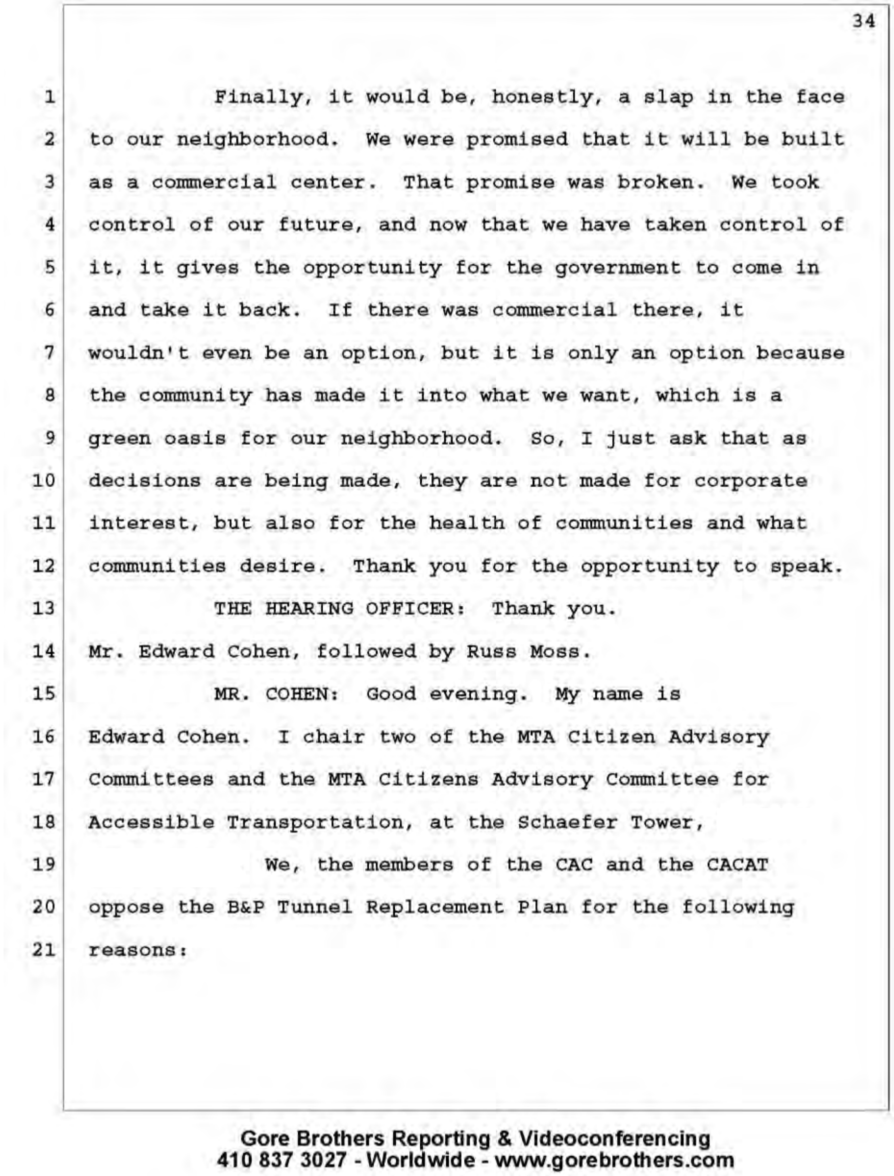
thousands of gallons of food from the dump to our neighborhood composting program, we have increased sales to low income residents by 57 percent. We partner with the local elementary school and the middle school to teach them healthy eating habits and how to garden. We have managed 28 apprentices from local colleges. We have employed four high school students in our in our summer internship program. We have hosted five community potlucks and we have hosted workshops on canning, fermentation, and other things. That is just in the past year.

Also, the farm serves as one of the truly -- one of the only places where neighbors from diverse racial and economic backgrounds can come together and it serves as a place where we can come across the many bridges that keep us apart.

If the ventilation building is to be built at its current proposed location, it will destroy not only the work that we have achieved, it will also destroy the future that we are trying to build for kids in our neighborhood by teaching them about healthy eating and trying to reverse the health outcomes that we currently have.

COMMENTS

RESPONSES



2 Finally, it would be, honestly, a slap in the face to our neighborhood. We were promised that it will be built as a commercial center. That promise was broken. We took control of our future, and now that we have taken control of it, it gives the opportunity for the government to come in and take it back. If there was commercial there, it wouldn't even be an option, but it is only an option because the community has made it into what we want, which is a green oasis for our neighborhood. So, I just ask that as decisions are being made, they are not made for corporate interest, but also for the health of communities and what communities desire. Thank you for the opportunity to speak.

THE HEARING OFFICER: Thank you. Mr. Edward Cohen, followed by Russ Moss.

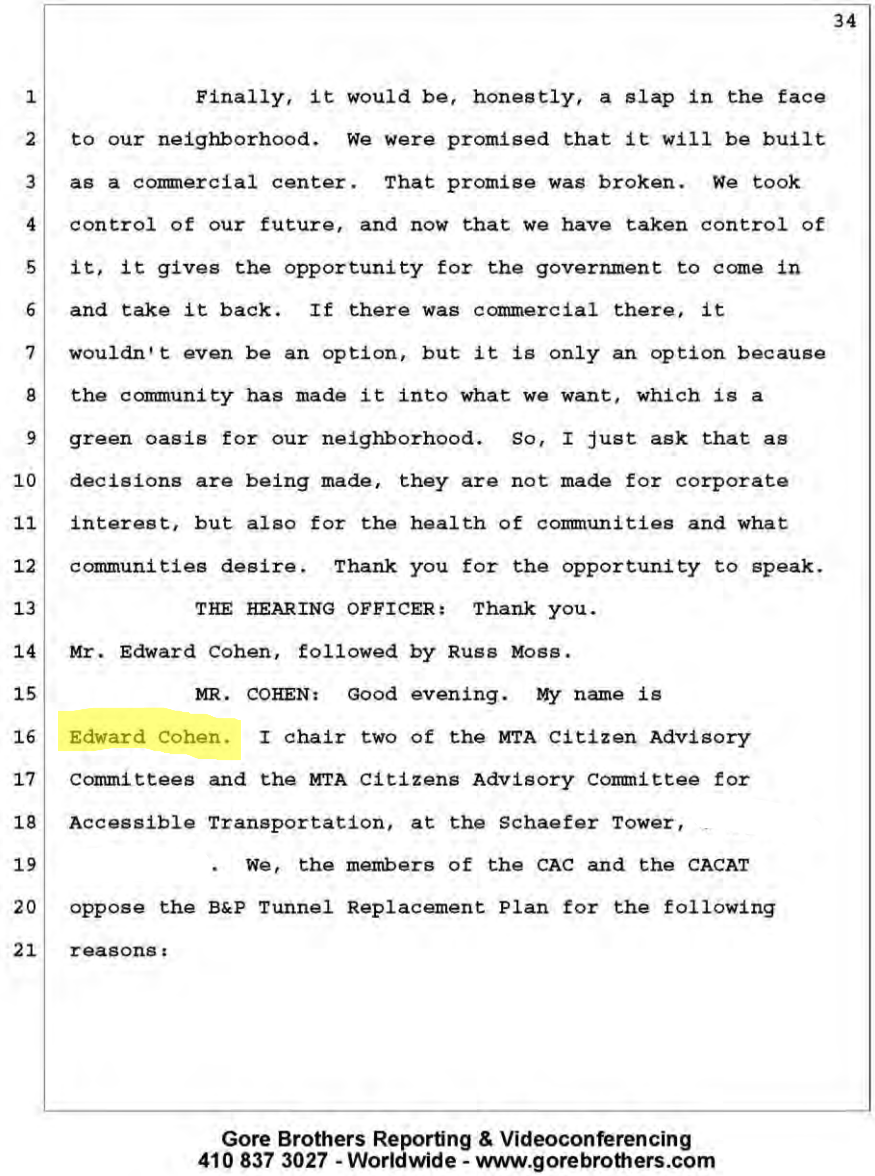
MR. COHEN: Good evening. My name is Edward Cohen. I chair two of the MTA Citizen Advisory Committees and the MTA Citizens Advisory Committee for Accessible Transportation, at the Schaefer Tower,

We, the members of the CAC and the CACAT oppose the B&P Tunnel Replacement Plan for the following reasons:

Response to Comment 2:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact and health. No impacts to community health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the Health and Safety Plan will be implemented and regulatory authorities notified to appropriately address the hazardous material concerns.

COMMENTS

DEIS Comment 112:



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Finally, it would be, honestly, a slap in the face to our neighborhood. We were promised that it will be built as a commercial center. That promise was broken. We took control of our future, and now that we have taken control of it, it gives the opportunity for the government to come in and take it back. If there was commercial there, it wouldn't even be an option, but it is only an option because the community has made it into what we want, which is a green oasis for our neighborhood. So, I just ask that as decisions are being made, they are not made for corporate interest, but also for the health of communities and what communities desire. Thank you for the opportunity to speak.

THE HEARING OFFICER: Thank you.
Mr. Edward Cohen, followed by Russ Moss.

1 MR. COHEN: Good evening. My name is Edward Cohen. I chair two of the MTA Citizen Advisory Committees and the MTA Citizens Advisory Committee for Accessible Transportation, at the Schaefer Tower, . We, the members of the CAC and the CACAT oppose the B&P Tunnel Replacement Plan for the following reasons:

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RESPONSES

Response to Comment 1:
The testimony provided addresses the possibility of restoring the Northern Central Railroad right-of-way; however, this is beyond the purview of the Project.

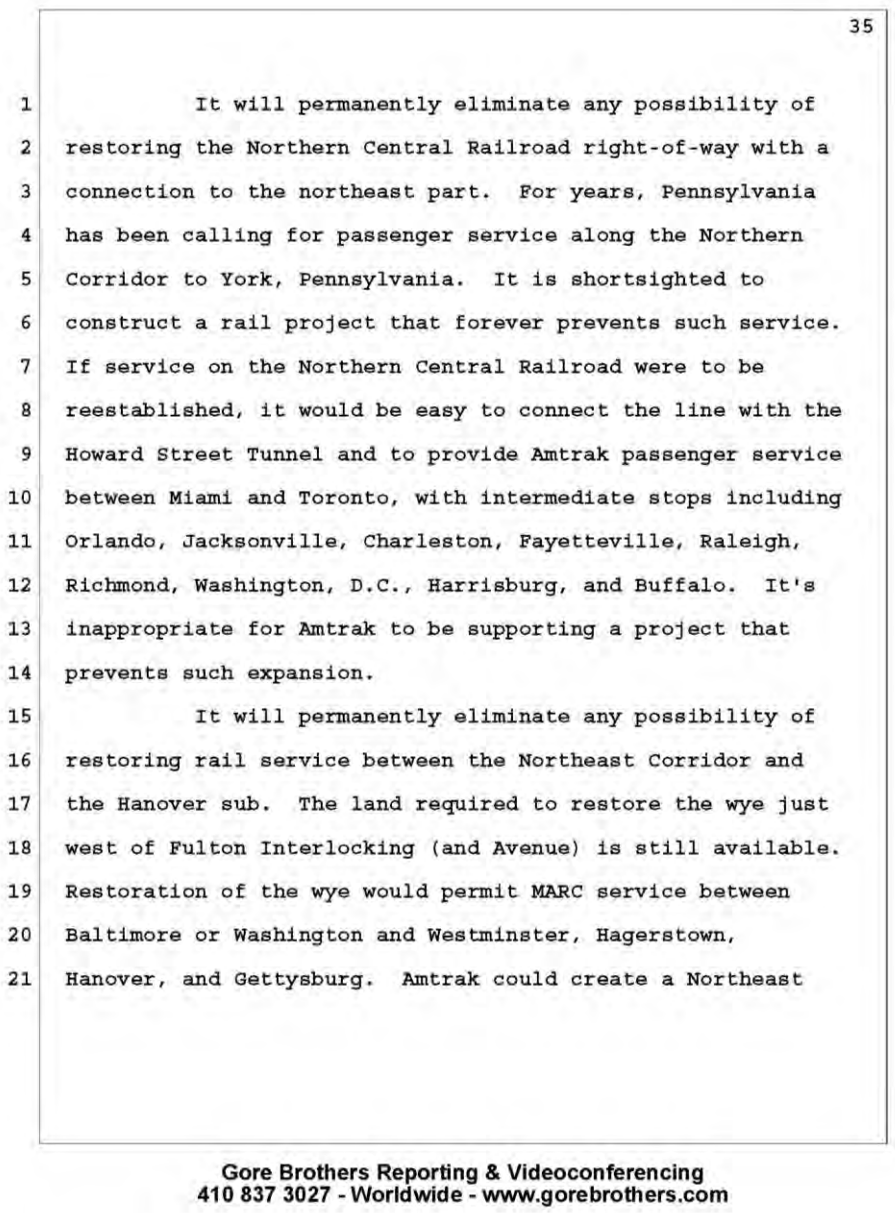
The report submitted along with the testimony, *A Proposal to Unravel Baltimore's Tangled Rail Lines*, argues for a comprehensive system approach to rail planning in Baltimore and the mid-Atlantic region. It describes a list of projects and the order in which they should be completed. The report takes into consideration local, state, and regional transportation routes, and recommends new construction at a number of locations in order to relieve congestion and create opportunities for expanding rail service in the future.

While recommendations in the report focus on resolving issues at a regional level, they would not address or resolve the specific needs of the B&P Tunnel; therefore, the improvements suggested in the report would be beyond the purview of the Project. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life. It is considered to be structurally deficient due to its age, the original design, and wear and tear. The Tunnel is also functionally obsolete and unable to meet current and future rail demands. For additional information regarding the purpose and need of the Project, please see **Chapter II** of this FEIS.

To review the September 2015 report in its entirety, please refer to **DEIS Comment #11**.

COMMENTS

RESPONSES



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It will permanently eliminate any possibility of restoring the Northern Central Railroad right-of-way with a connection to the northeast part. For years, Pennsylvania has been calling for passenger service along the Northern Corridor to York, Pennsylvania. It is shortsighted to construct a rail project that forever prevents such service. If service on the Northern Central Railroad were to be reestablished, it would be easy to connect the line with the Howard Street Tunnel and to provide Amtrak passenger service between Miami and Toronto, with intermediate stops including Orlando, Jacksonville, Charleston, Fayetteville, Raleigh, Richmond, Washington, D.C., Harrisburg, and Buffalo. It's inappropriate for Amtrak to be supporting a project that prevents such expansion.

It will permanently eliminate any possibility of restoring rail service between the Northeast Corridor and the Hanover sub. The land required to restore the wye just west of Fulton Interlocking (and Avenue) is still available. Restoration of the wye would permit MARC service between Baltimore or Washington and Westminster, Hagerstown, Hanover, and Gettysburg. Amtrak could create a Northeast

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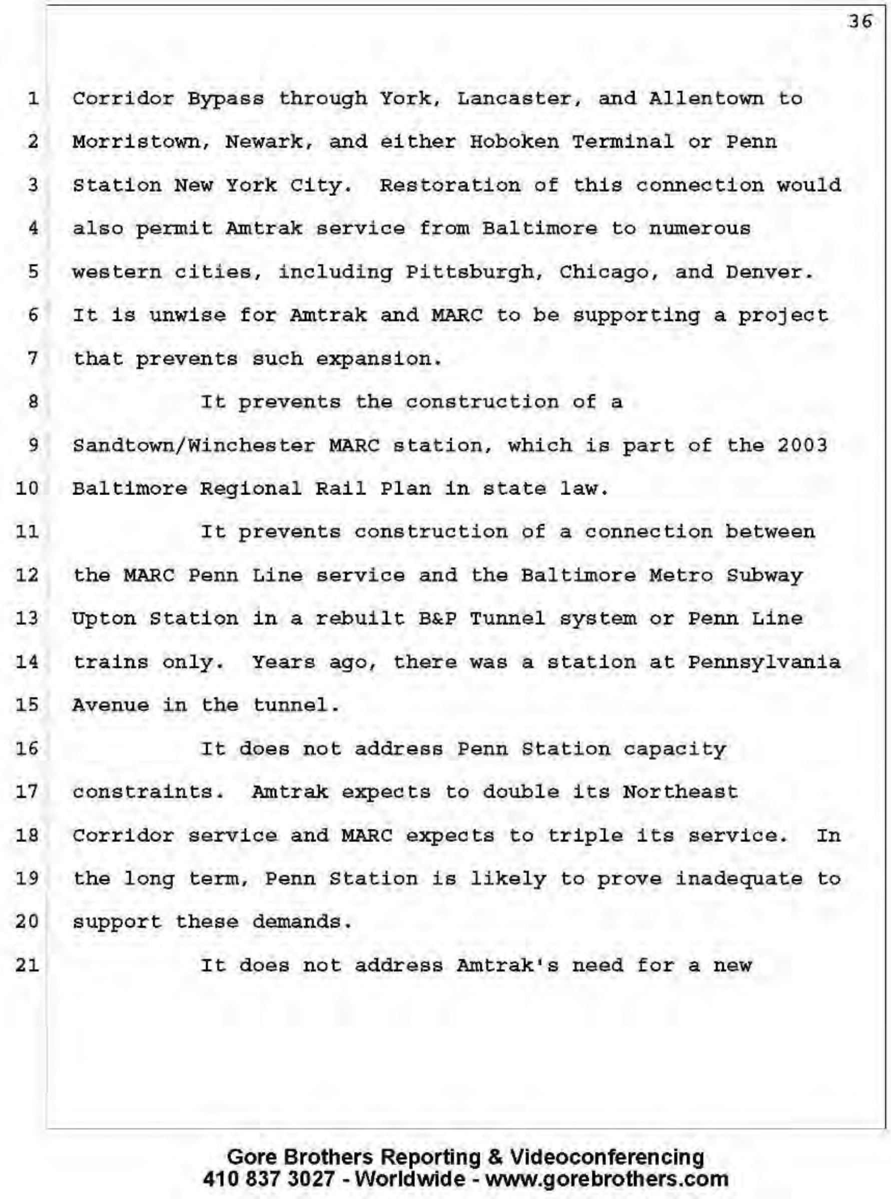
COMMENTS

RESPONSES



Corridor Bypass through York, Lancaster, and Allentown to Morristown, Newark, and either Hoboken Terminal or Penn Station New York City. Restoration of this connection would also permit Amtrak service from Baltimore to numerous western cities, including Pittsburgh, Chicago, and Denver. It is unwise for Amtrak and MARC to be supporting a project that prevents such expansion.

It prevents the construction of a Sandtown/Winchester MARC station, which is part of the 2003 Baltimore Regional Rail Plan in state law.

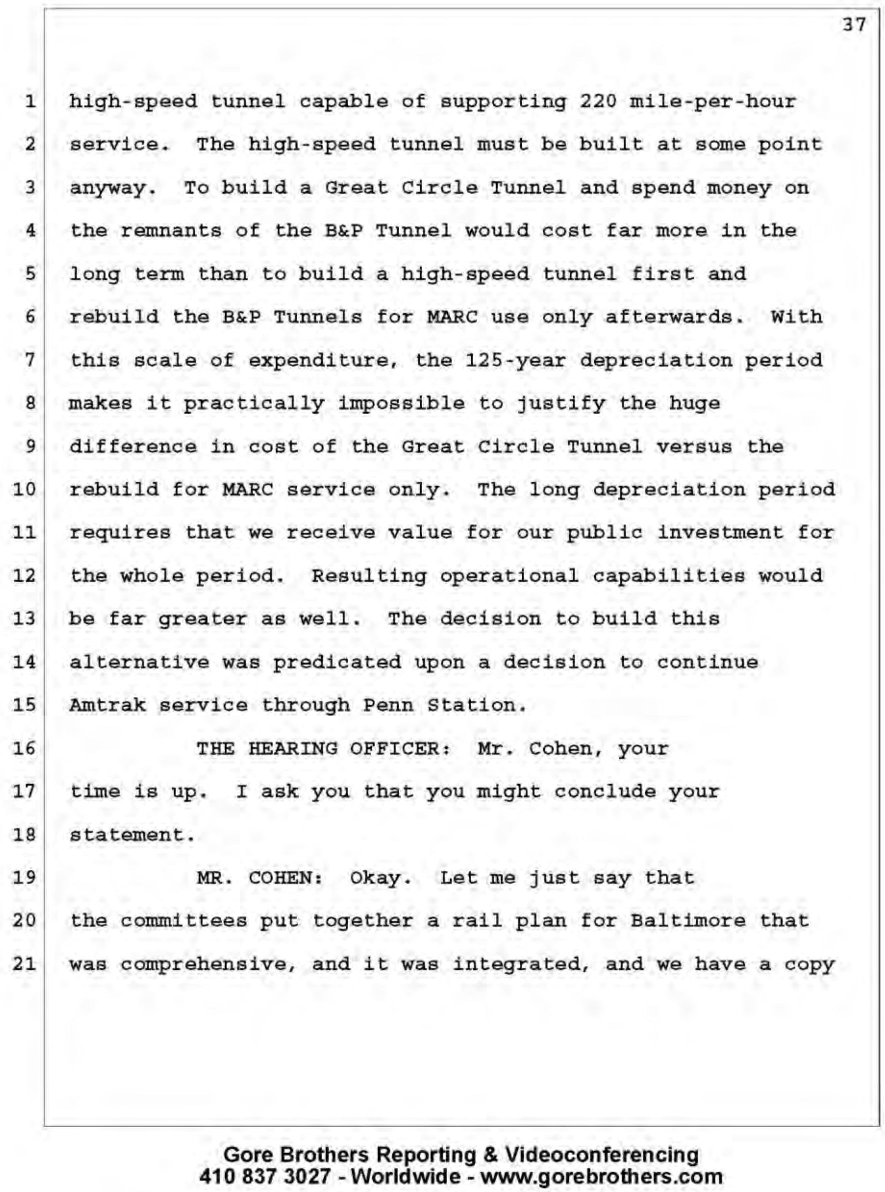
It prevents construction of a connection between the MARC Penn Line service and the Baltimore Metro Subway Upton Station in a rebuilt B&P Tunnel system or Penn Line trains only. Years ago, there was a station at Pennsylvania Avenue in the tunnel.

It does not address Penn Station capacity constraints. Amtrak expects to double its Northeast Corridor service and MARC expects to triple its service. In the long term, Penn Station is likely to prove inadequate to support these demands.

It does not address Amtrak's need for a new

COMMENTS

RESPONSES



high-speed tunnel capable of supporting 220 mile-per-hour service. The high-speed tunnel must be built at some point anyway. To build a Great Circle Tunnel and spend money on the remnants of the B&P Tunnel would cost far more in the long term than to build a high-speed tunnel first and rebuild the B&P Tunnels for MARC use only afterwards. With this scale of expenditure, the 125-year depreciation period makes it practically impossible to justify the huge difference in cost of the Great Circle Tunnel versus the rebuild for MARC service only. The long depreciation period requires that we receive value for our public investment for the whole period. Resulting operational capabilities would be far greater as well. The decision to build this alternative was predicated upon a decision to continue Amtrak service through Penn Station.

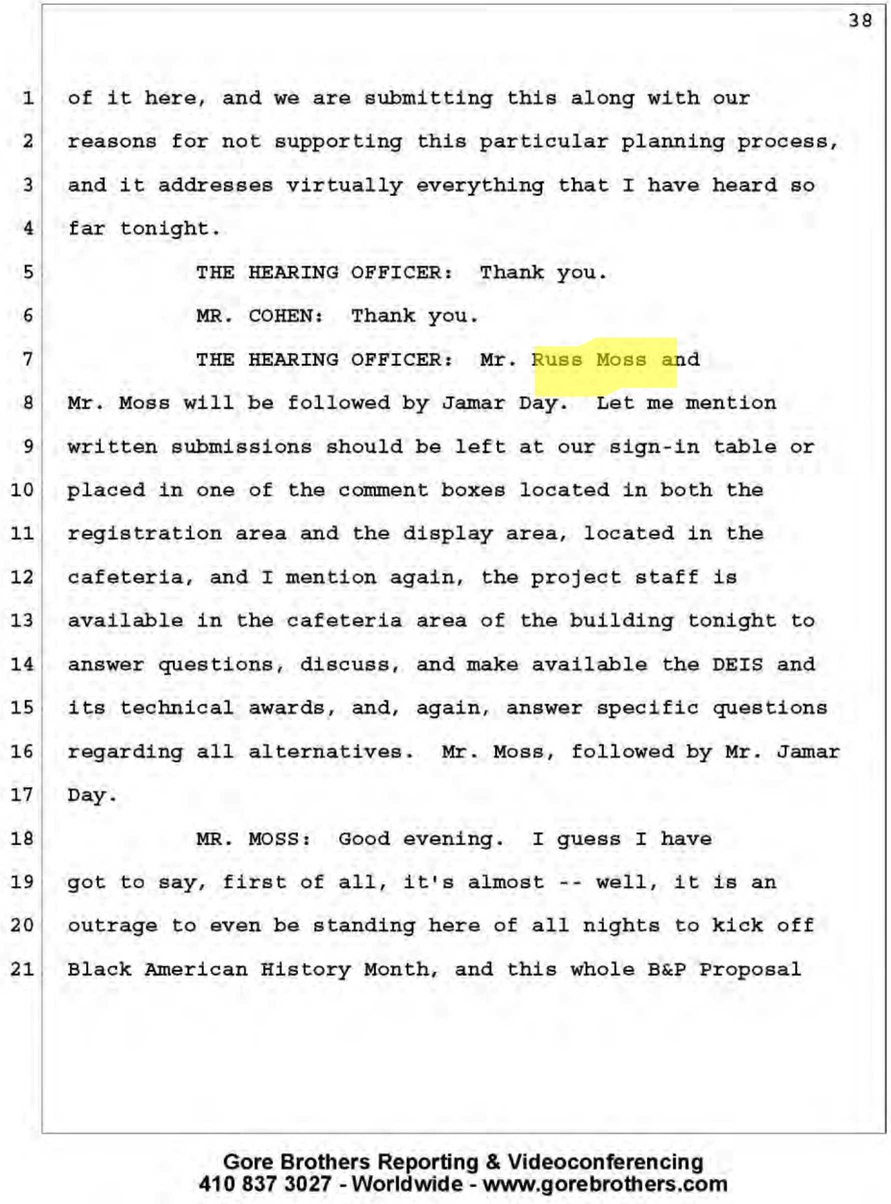
THE HEARING OFFICER: Mr. Cohen, your time is up. I ask you that you might conclude your statement.

MR. COHEN: Okay. Let me just say that the committees put together a rail plan for Baltimore that was comprehensive, and it was integrated, and we have a copy

COMMENTS

RESPONSES

DEIS Comment 113:



of it here, and we are submitting this along with our reasons for not supporting this particular planning process, and it addresses virtually everything that I have heard so far tonight.

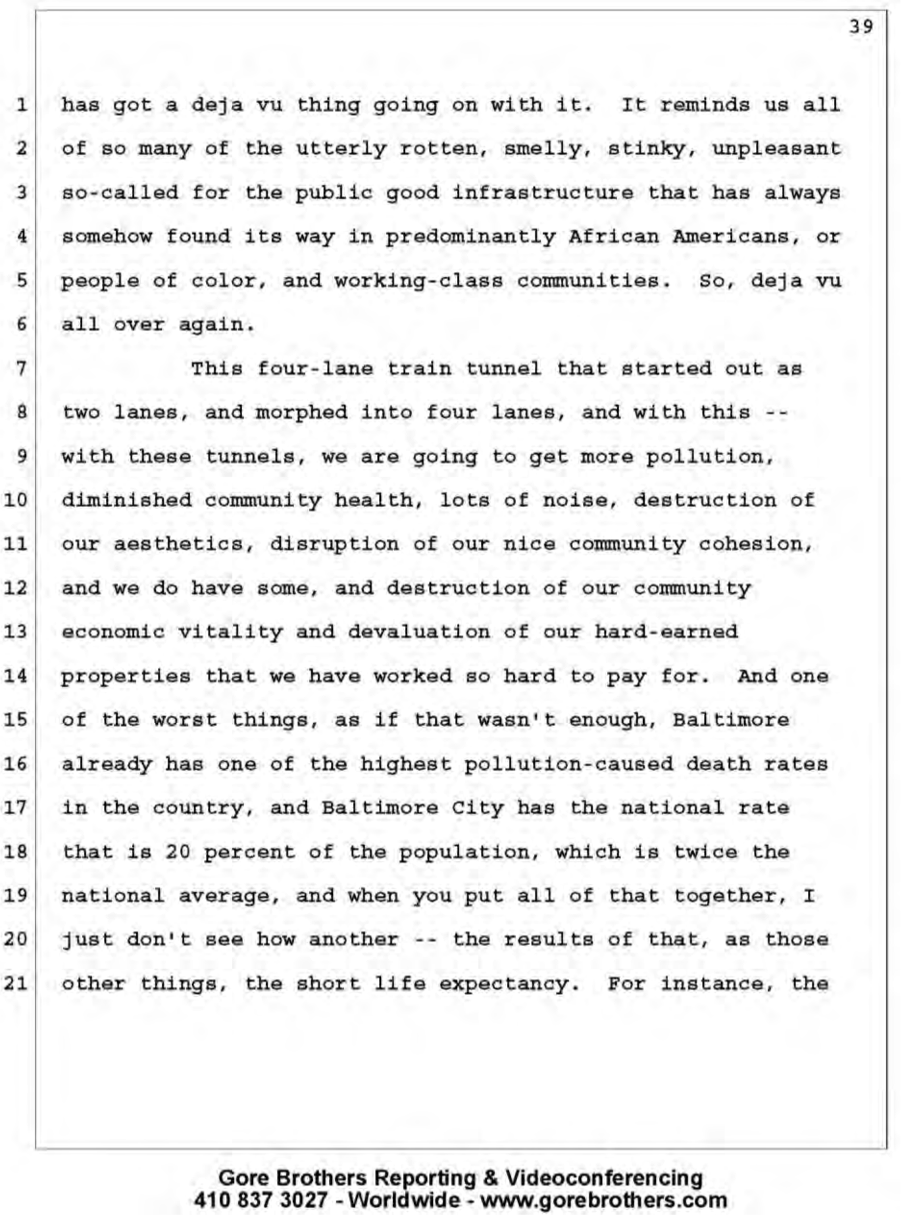
THE HEARING OFFICER: Thank you.

MR. COHEN: Thank you.

THE HEARING OFFICER: Mr. Russ Moss and Mr. Moss will be followed by Jamar Day. Let me mention written submissions should be left at our sign-in table or placed in one of the comment boxes located in both the registration area and the display area, located in the cafeteria, and I mention again, the project staff is available in the cafeteria area of the building tonight to answer questions, discuss, and make available the DEIS and its technical awards, and, again, answer specific questions regarding all alternatives. Mr. Moss, followed by Mr. Jamar Day.

MR. MOSS: Good evening. I guess I have got to say, first of all, it's almost -- well, it is an outrage to even be standing here of all nights to kick off Black American History Month, and this whole B&P Proposal

COMMENTS



has got a deja vu thing going on with it. It reminds us all
of so many of the utterly rotten, smelly, stinky, unpleasant
so-called for the public good infrastructure that has always
somehow found its way in predominantly African Americans, or
people of color, and working-class communities. So, deja vu
all over again.

1 This four-lane train tunnel that started out as
two lanes, and morphed into four lanes, and with this --
2 with these tunnels, we are going to get more pollution,
diminished community health, lots of noise, destruction of
3 our aesthetics, disruption of our nice community cohesion,
and we do have some, and destruction of our community
economic vitality and devaluation of our hard-earned
properties that we have worked so hard to pay for. And one
of the worst things, as if that wasn't enough, Baltimore
already has one of the highest pollution-caused death rates
in the country, and Baltimore City has the national rate
that is 20 percent of the population, which is twice the
national average, and when you put all of that together, I
just don't see how another -- the results of that, as those
other things, the short life expectancy. For instance, the

RESPONSES

Response to Comment 1:
The Northeast Corridor (NEC) faces serious challenges to meet current and projected travel demand. Responding to these pressing issues, the FRA initiated the NEC FUTURE Environmental Impact Statement as a comprehensive planning process for future investment in the corridor. The NEC FUTURE identified the B&P Tunnel as one of the segments along the NEC that faces capacity constraints and reliability challenges due to multiple chokepoints and state-of-good-repair needs.

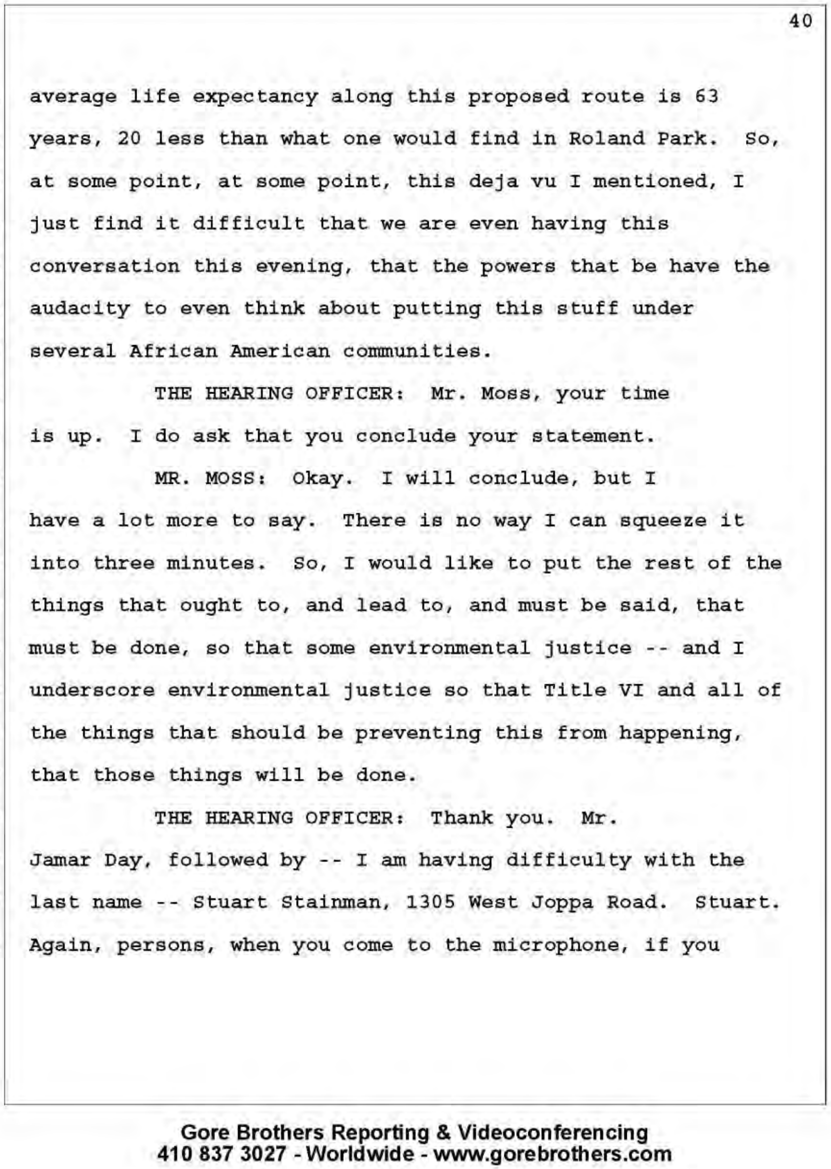
Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

Response to Comment 2:
Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am to 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**.

No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

COMMENTS



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average life expectancy along this proposed route is 63 years, 20 less than what one would find in Roland Park. So, at some point, at some point, this deja vu I mentioned, I just find it difficult that we are even having this conversation this evening, that the powers that be have the audacity to even think about putting this stuff under several African American communities.

THE HEARING OFFICER: Mr. Moss, your time is up. I do ask that you conclude your statement.

4 MR. MOSS: Okay. I will conclude, but I have a lot more to say. There is no way I can squeeze it into three minutes. So, I would like to put the rest of the things that ought to, and lead to, and must be said, that must be done, so that some environmental justice -- and I underscore environmental justice so that Title VI and all of the things that should be preventing this from happening, that those things will be done.

THE HEARING OFFICER: Thank you. Mr. Jamar Day, followed by -- I am having difficulty with the last name -- Stuart Stainman, 1305 West Joppa Road. Stuart. Again, persons, when you come to the microphone, if you

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RESPONSES

The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

Response to Comment 3:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Response to Comment 4:
Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of Transportation's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

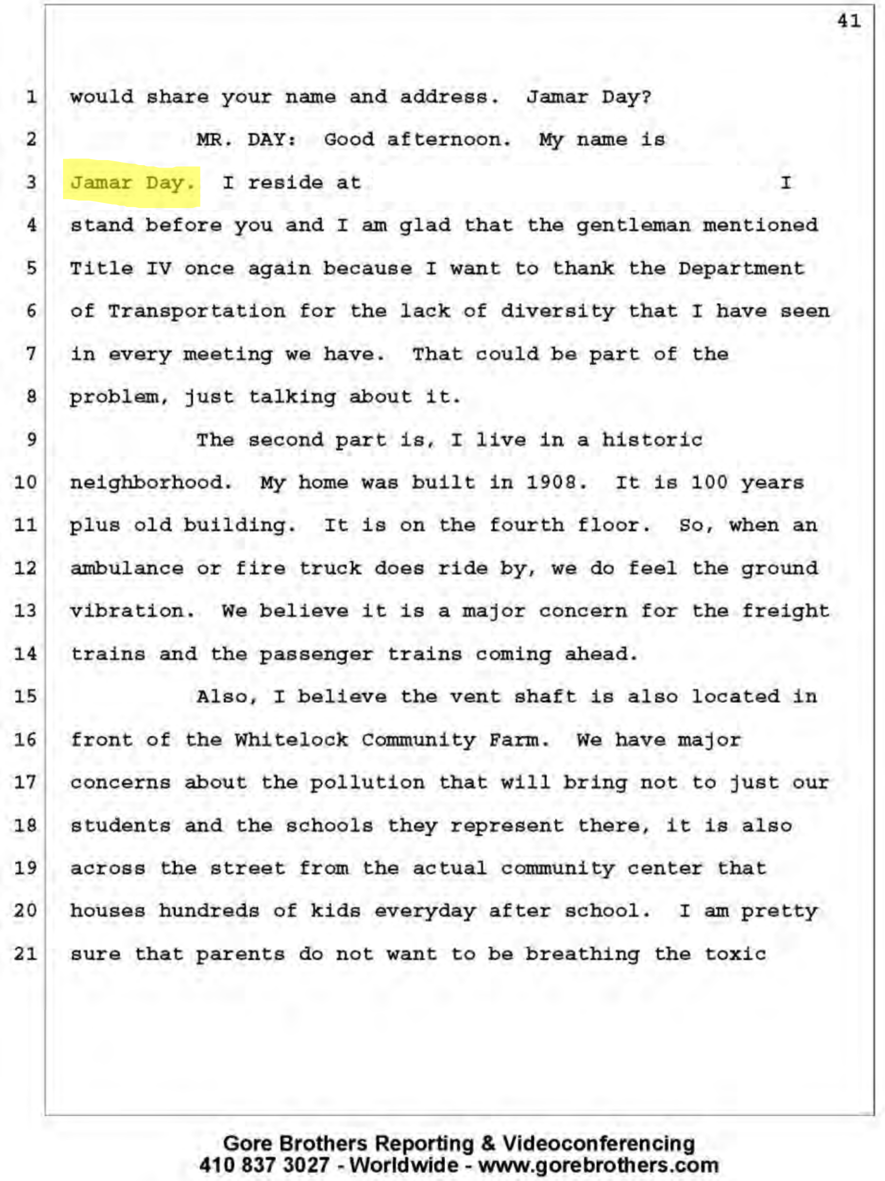
The B&P Project Team has performed an Environmental Justice (EJ) analysis consistent with EO 12898 and subsequent USDOT Orders. A critical component of the Executive Order on environmental justice is public outreach. The Project Team has conducted extensive engagement with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held with local officials; public, local, and regional

COMMENTS	RESPONSES
	organizations; government agencies; and representatives of affected EJ communities along the evaluated alternative alignment. Three Public Open Houses, as well as ten community meetings, have been held where the public was given the opportunity to learn about the Project development in-person, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings. Additionally, the Project Team attended meetings at the request of the following organizations: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter's Clavier Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School. Direct mailings to residents in the Study Area included property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The Project website continues to post meeting notices, Project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship, and other organizations. The Project Team studied community composition in the areas affected by the build alternatives. It reviewed data from the American Community Survey 2009-2013 for minority and low-income populations, the National Center for Educational Statistics, government-assisted housing programs, historical references, city officials, field visits, and community meetings. From this information, the Project Team learned that of the 77 Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS. Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations. For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings. As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be

COMMENTS	RESPONSES
	underground which would reduce the overall impact to the communities. The Project sponsor will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project sponsor will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

COMMENTS

DEIS Comment 114:



would share your name and address. Jamar Day?

MR. DAY: Good afternoon. My name is Jamar Day. I reside at I stand before you and I am glad that the gentleman mentioned Title IV once again because I want to thank the Department of Transportation for the lack of diversity that I have seen in every meeting we have. That could be part of the problem, just talking about it.

The second part is, I live in a historic neighborhood. My home was built in 1908. It is 100 years plus old building.

1 It is on the fourth floor. So, when an ambulance or fire truck does ride by, we do feel the ground vibration.

2 We believe it is a major concern for the freight trains and the passenger trains coming ahead.

Also, I believe the vent shaft is also located in front of the Whitelock Community Farm.

3 We have major concerns about the pollution that will bring not to just our students and the schools they represent there, it is also across the street from the actual community center that houses hundreds of kids everyday after school. I am pretty sure that parents do not want to be breathing the toxic

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RESPONSES

Response to Comment 1:
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

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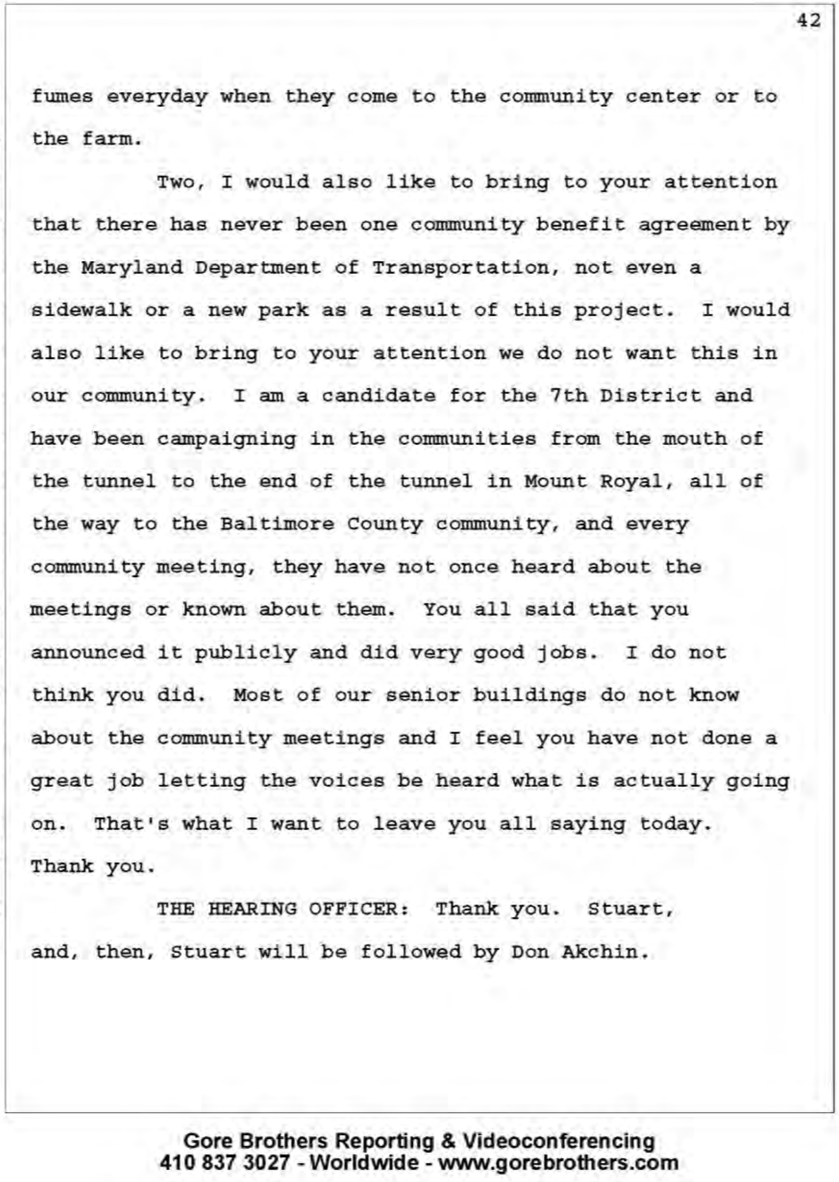

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3 fumes everyday when they come to the community center or to the farm.

4 Two, I would also like to bring to your attention that there has never been one community benefit agreement by the Maryland Department of Transportation, not even a sidewalk or a new park as a result of this project. I would also like to bring to your attention we do not want this in our community. I am a candidate for the 7th District and have been campaigning in the communities from the mouth of the tunnel to the end of the tunnel in Mount Royal, all of the way to the Baltimore County community, and every

5 community meeting, they have not once heard about the meetings or known about them. You all said that you announced it publicly and did very good jobs. I do not think you did. Most of our senior buildings do not know about the community meetings and I feel you have not done a great job letting the voices be heard what is actually going on. That's what I want to leave you all saying today. Thank you.

THE HEARING OFFICER: Thank you. Stuart, and, then, Stuart will be followed by Don Akchin.

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RESPONSES

Response to Comment 2:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes.

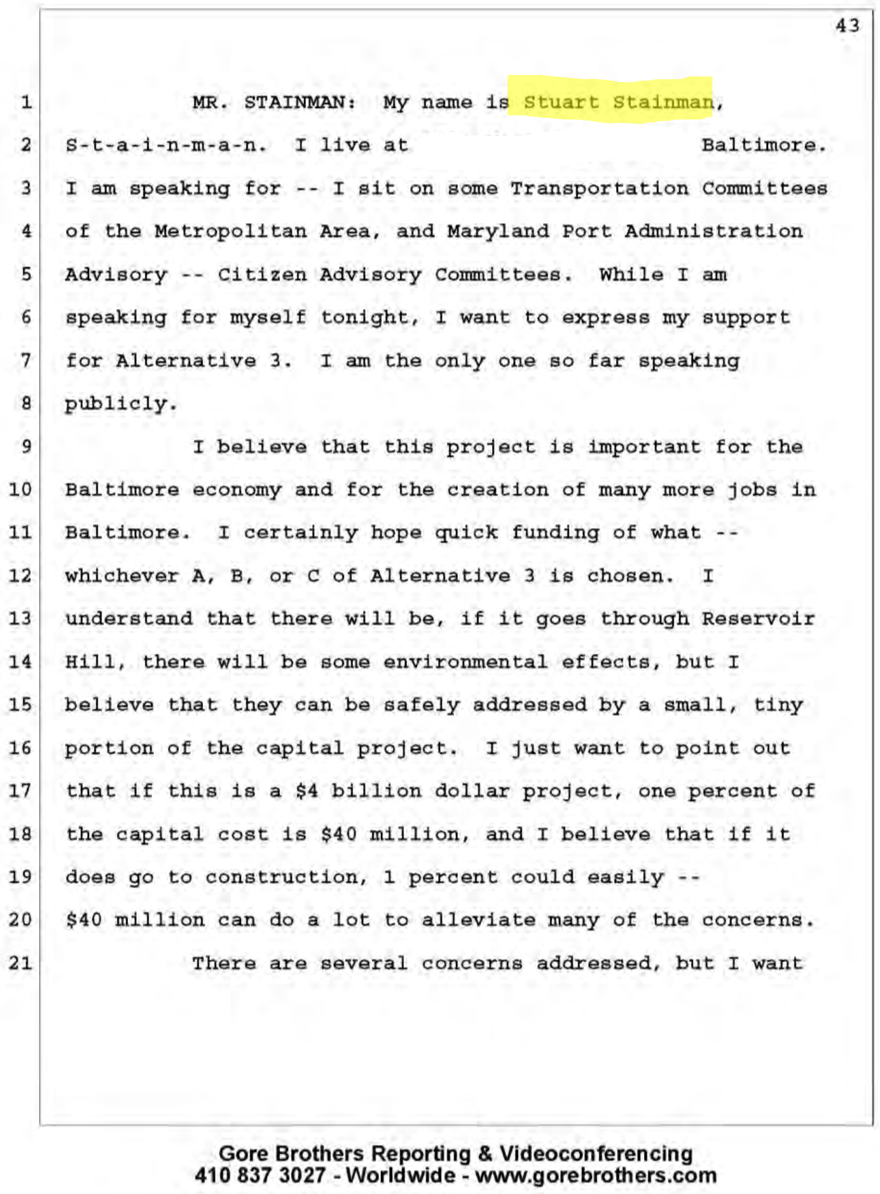
Response to Comment 3:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

COMMENTS	RESPONSES
	Response to Comment 4: Since the publication of the DEIS, mitigation development has advanced and mitigation measures are included in this FEIS. Some examples include installation of public facilities, community centers, public services, small business assistance, and pedestrian and bicycle access improvements. Please refer to **Chapter VII** for more information. Final mitigation plans would be completed following the selection of the Preferred Alternative and final determination of impacts on the community. **Response to Comment 5:** The Project DEIS, including Appendices and supporting Technical Reports, was made available for comment from December 18th, 2015 to February 26, 2016. As described in **Chapter VIII** of this FEIS, the DEIS was distributed to several Federal, State, Regional, City, and County agencies, community organizations, stakeholders, and elected officials. The DEIS is also available on the Project website www.bptunnel.com. A hard copy of the DEIS document was also made available at ten locations, including the Baltimore City Department of Transportation, Transit Bureau, Bentalou Recreation Center, Bon Secours Community Works, four Enoch Pratt Library locations, John Eager Howard Recreation Center, Maryland Department of Transportation, and the Maryland Transit Administration. The Project Team has engaged in extensive public outreach throughout the development of the project, including holding three public open houses and ten community meetings where the public was given the opportunity to learn about the project and engage in discussion with the Project Team. In addition to these meetings, the Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS. Additional details of this outreach are described in **Chapter VI** as well as **Chapter VIII.**

COMMENTS

DEIS Comment 115:



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MR. STAINMAN: My name is Stuart Stainman, S-t-a-i-n-m-a-n. I live at Baltimore. I am speaking for -- I sit on some Transportation Committees of the Metropolitan Area, and Maryland Port Administration Advisory -- Citizen Advisory Committees. While I am speaking for myself tonight, I want to express my support for Alternative 3. I am the only one so far speaking publicly.

I believe that this project is important for the Baltimore economy and for the creation of many more jobs in Baltimore. I certainly hope quick funding of what -- whichever A, B, or C of Alternative 3 is chosen. I understand that there will be, if it goes through Reservoir Hill, there will be some environmental effects, but I believe that they can be safely addressed by a small, tiny portion of the capital project. I just want to point out that if this is a $4 billion dollar project, one percent of the capital cost is $40 million, and I believe that if it does go to construction, 1 percent could easily -- $40 million can do a lot to alleviate many of the concerns.

There are several concerns addressed, but I want

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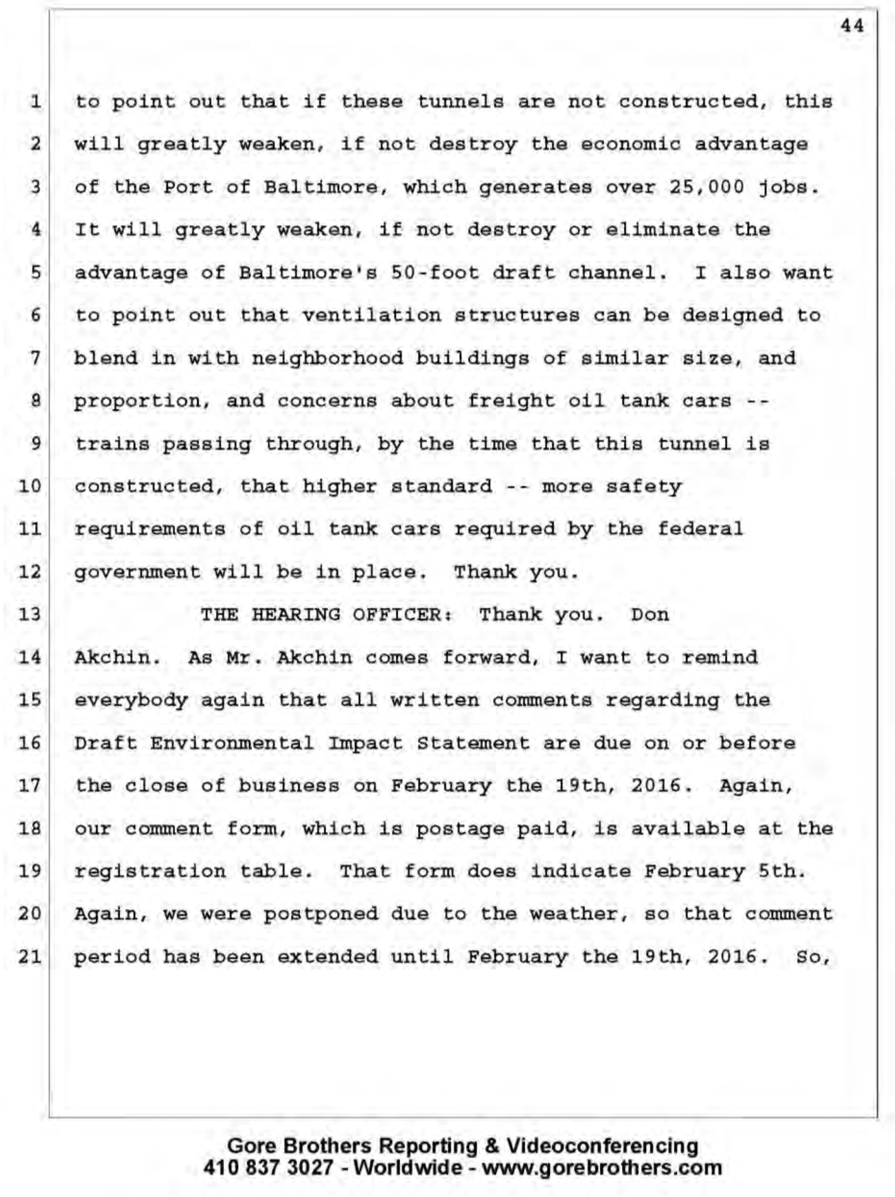
RESPONSES

Response to Comment 1:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

RESPONSES



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to point out that if these tunnels are not constructed, this will greatly weaken, if not destroy the economic advantage of the Port of Baltimore, which generates over 25,000 jobs. It will greatly weaken, if not destroy or eliminate the advantage of Baltimore's 50-foot draft channel. I also want to point out that ventilation structures can be designed to blend in with neighborhood buildings of similar size, and proportion, and concerns about freight oil tank cars -- trains passing through, by the time that this tunnel is constructed, that higher standard -- more safety requirements of oil tank cars required by the federal government will be in place. Thank you.

THE HEARING OFFICER: Thank you. Don Akchin. As Mr. Akchin comes forward, I want to remind everybody again that all written comments regarding the Draft Environmental Impact Statement are due on or before the close of business on February the 19th, 2016. Again, our comment form, which is postage paid, is available at the registration table. That form does indicate February 5th. Again, we were postponed due to the weather, so that comment period has been extended until February the 19th, 2016. So,

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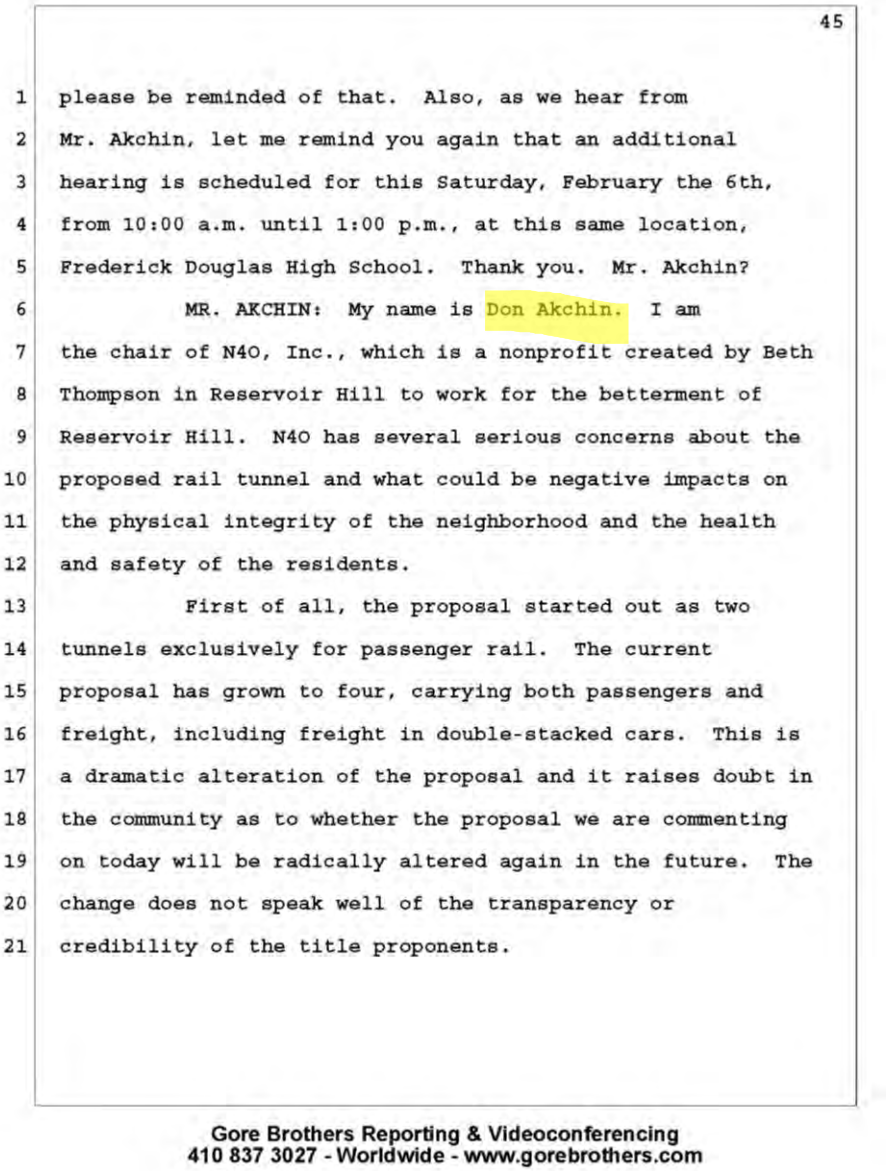
COMMENTS

DEIS Comment 116:



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please be reminded of that. Also, as we hear from Mr. Akchin, let me remind you again that an additional hearing is scheduled for this Saturday, February the 6th, from 10:00 a.m. until 1:00 p.m., at this same location, Frederick Douglas High School. Thank you. Mr. Akchin?

MR. AKCHIN: My name is Don Akchin. I am the chair of N40, Inc., which is a nonprofit created by Beth Thompson in Reservoir Hill to work for the betterment of Reservoir Hill. N40 has several serious concerns about the proposed rail tunnel and what could be negative impacts on the physical integrity of the neighborhood and the health and safety of the residents.

1 First of all, the proposal started out as two tunnels exclusively for passenger rail. The current proposal has grown to four, carrying both passengers and freight, including freight in double-stacked cars. This is a dramatic alteration of the proposal and it raises doubt in the community as to whether the proposal we are commenting on today will be radically altered again in the future. The change does not speak well of the transparency or credibility of the title proponents.

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RESPONSES

Response to Comment 1:
The Northeast Corridor (NEC) faces serious challenges to meet current and projected travel demand. Responding to these pressing issues, the FRA initiated the NEC FUTURE Environmental Impact Statement as a comprehensive planning process for future investment in the corridor. The NEC FUTURE identified the B&P Tunnel as one of the segments along the NEC that faces capacity constraints and reliability challenges due to multiple chokepoints and state-of-good-repair needs.

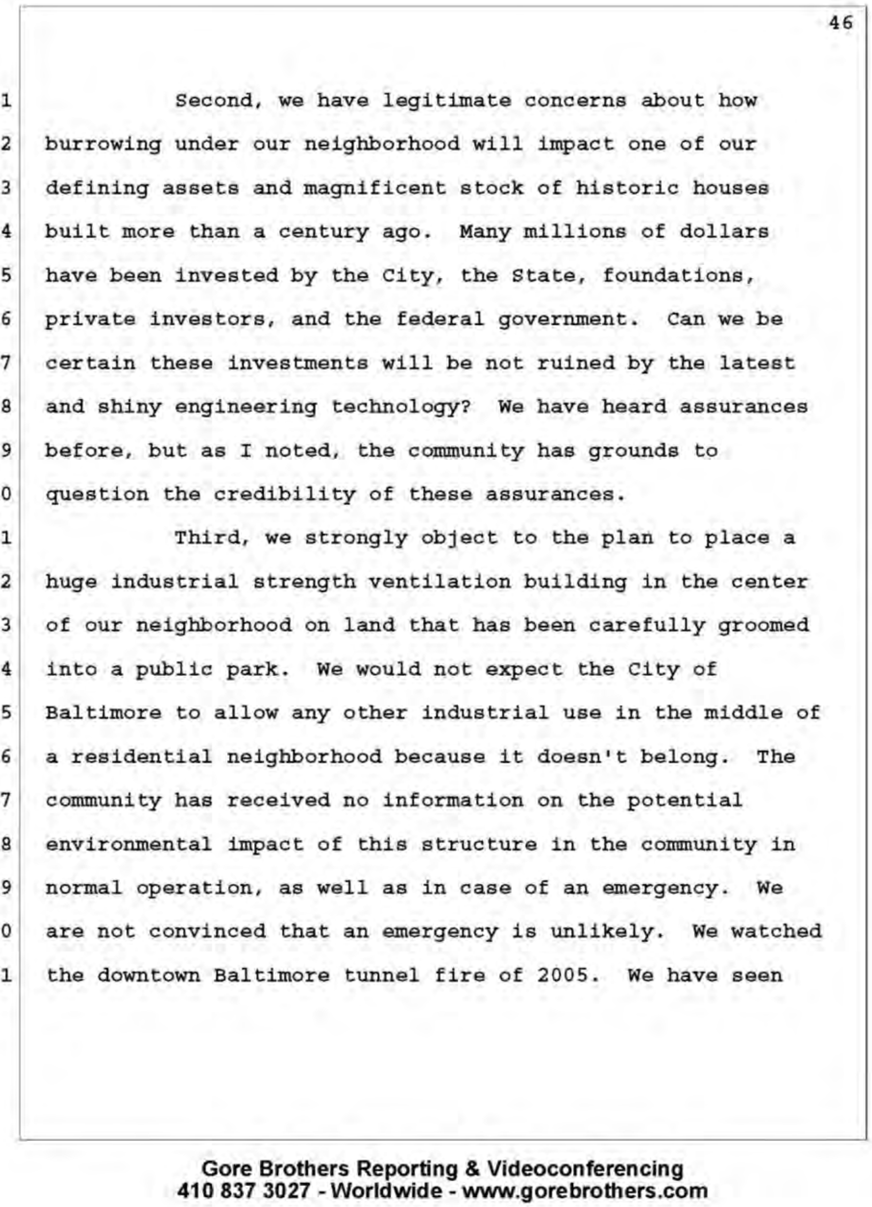
Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

Amtrak design practices require new NEC infrastructure meet current standards, including Plate H (double stack) clearances. However, the new tunnel could not be used by double stack freight trains unless certain factors are met. These factors include:

- Substantial improvements, such as extensive additional vertical clearance improvements north and south of the B&P Tunnel to other NEC infrastructure; these improvements are not being designed as part of the B&P Project;
- Federal, state, local and regional support for aforementioned improvements including funding and policy;
- Increasing the bridge and catenary clearance on the NEC where double stack/high dimension trains are to travel;
- Construction of new or modified Union tunnel to Plate H/K (double stack) clearances; without a high dimension Union tunnel, double stack freight service using the B&P Tunnel is not possible;
- NS currently favors the Harrisburg-Perryville route for intermodal service;
- Freight schedules limited to off peak/night time periods which affects the scheduling flexibility and transit time for high priority (Intermodal) shipments for which time is absolutely critical; and
- Construction of track connection/s between the CSX and the NEC if CSX chooses to use the NEC.

In the short-term, there is no indication of any significant increase in freight movements through the B&P Tunnel.

COMMENTS



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Second, we have legitimate concerns about how
burrowing under our neighborhood will impact one of our
defining assets and magnificent stock of historic houses
built more than a century ago. Many millions of dollars
have been invested by the City, the State, foundations,
private investors, and the federal government. Can we be
2 certain these investments will be not ruined by the latest
and shiny engineering technology? We have heard assurances
before, but as I noted, the community has grounds to
question the credibility of these assurances.

Third, we strongly object to the plan to place a
huge industrial strength ventilation building in the center
of our neighborhood on land that has been carefully groomed
into a public park. We would not expect the City of
3 Baltimore to allow any other industrial use in the middle of
a residential neighborhood because it doesn't belong. The
community has received no information on the potential
environmental impact of this structure in the community in
normal operation, as well as in case of an emergency. We
are not convinced that an emergency is unlikely. We watched
the downtown Baltimore tunnel fire of 2005. We have seen

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RESPONSES

Response to Comment 2:
All of the proposed Project infrastructure will be designed, constructed, and maintained using proven modern design and safety standards. The Project will be designed in accordance with applicable regulations, oversight agency guidance, and knowledge of safety standards to ensure optimal safety.

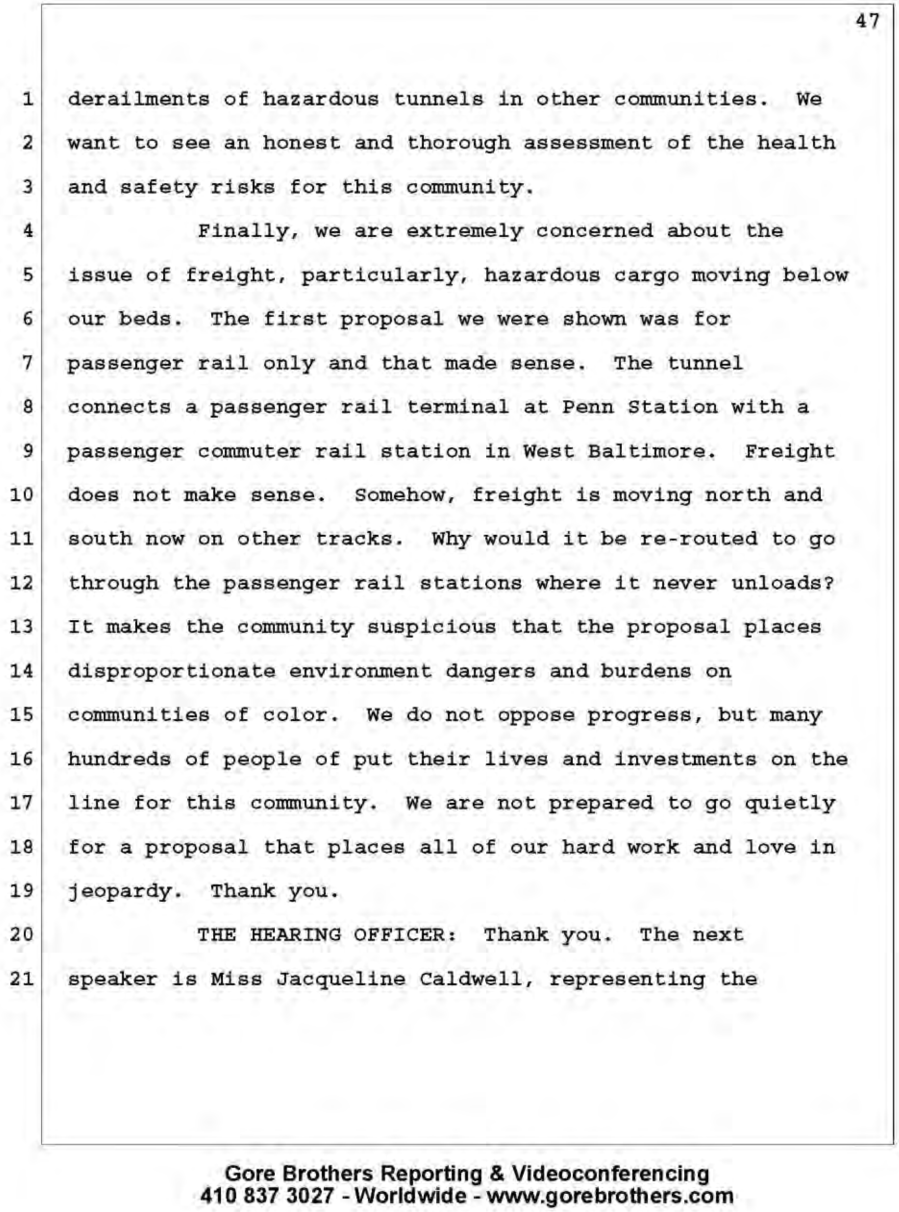
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

COMMENTS



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4 derailments of hazardous tunnels in other communities. We
want to see an honest and thorough assessment of the health
and safety risks for this community.

5 Finally, we are extremely concerned about the
issue of freight, particularly, hazardous cargo moving below
our beds. The first proposal we were shown was for
passenger rail only and that made sense. The tunnel
connects a passenger rail terminal at Penn Station with a
6 passenger commuter rail station in West Baltimore. Freight
does not make sense. Somehow, freight is moving north and
south now on other tracks. Why would it be re-routed to go
through the passenger rail stations where it never unloads?
It makes the community suspicious that the proposal places
disproportionate environment dangers and burdens on
communities of color. We do not oppose progress, but many
hundreds of people of put their lives and investments on the
line for this community. We are not prepared to go quietly
for a proposal that places all of our hard work and love in
jeopardy. Thank you.

THE HEARING OFFICER: Thank you. The next
speaker is Miss Jacqueline Caldwell, representing the

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RESPONSES

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

Response to Comment 3:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 4:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

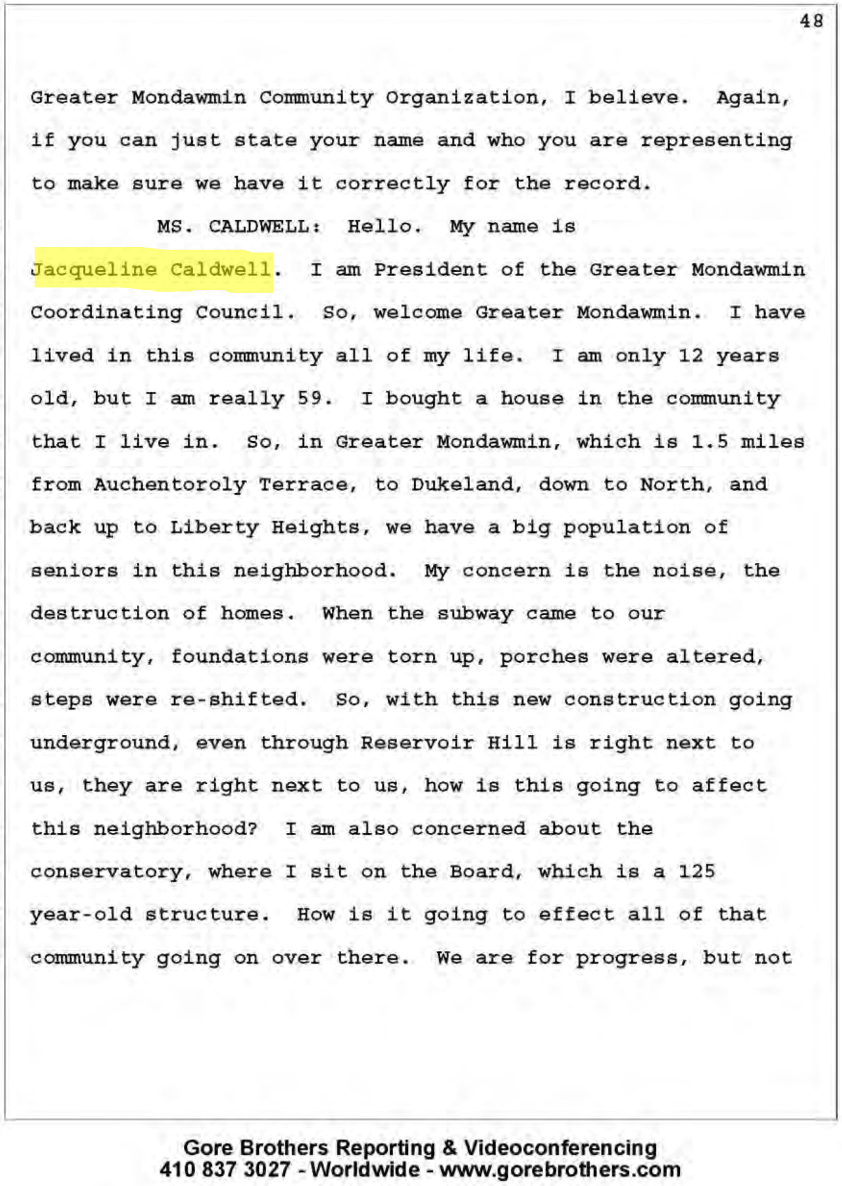
Response to Comment 5:
Norfolk Southern has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

COMMENTS	RESPONSES
	FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection. The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future. **Response to Comment 6:** The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.** Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes. The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

COMMENTS

DEIS Comment 117:



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Greater Mondawmin Community Organization, I believe. Again,
if you can just state your name and who you are representing
to make sure we have it correctly for the record.
MS. CALDWELL: Hello. My name is
Jacqueline Caldwell. I am President of the Greater Mondawmin
Coordinating Council. So, welcome Greater Mondawmin. I have
lived in this community all of my life. I am only 12 years
old, but I am really 59. I bought a house in the community
that I live in. So, in Greater Mondawmin, which is 1.5 miles
from Auchentoroly Terrace, to Dukeland, down to North, and
back up to Liberty Heights, we have a big population of
seniors in this neighborhood. My concern is the noise, the
1 destruction of homes. When the subway came to our
community, foundations were torn up, porches were altered,
steps were re-shifted. So, with this new construction going
underground, even through Reservoir Hill is right next to
2 us, they are right next to us, how is this going to affect
this neighborhood? I am also concerned about the
conservatory, where I sit on the Board, which is a 125
year-old structure. How is it going to effect all of that
community going on over there. We are for progress, but not

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RESPONSES

Response to Comment 1:
The Project Team has performed an impact analysis for noise following the Federal Transit Administration's guidance manual. The number of potential moderate and severe impacts were estimated using noise contour maps and land use information. For the Preferred Alternative, 296 moderate and 141 severe residential noise impacts above the FTA Frequent Impact Criterion of 35 dBA are anticipated. Mitigation measures were investigated for addressing moderate and severe noise impacts from tunnel operations and include vehicle skirts, undercar absorption, spring frogs, and acquisition of a buffer zone, among others, which are documented in **Chapter VII** of this FEIS.

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

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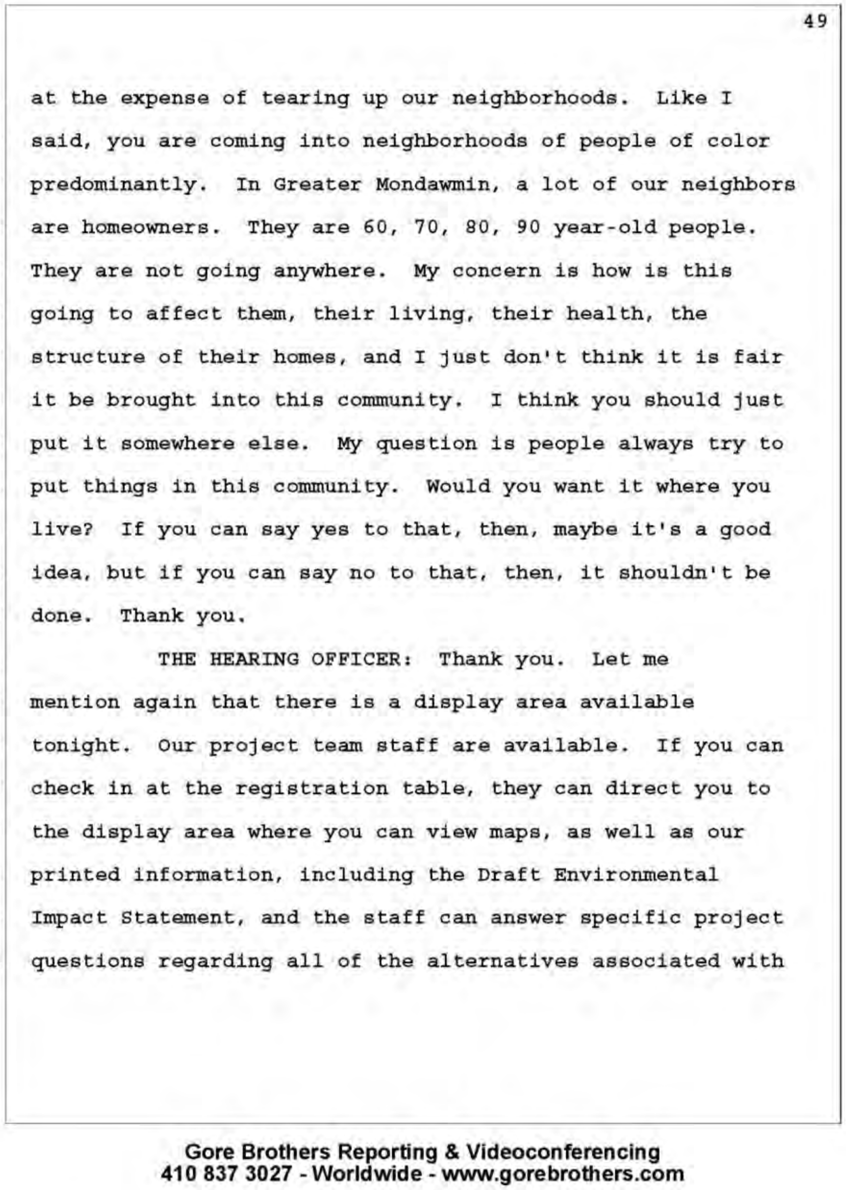

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at the expense of tearing up our neighborhoods. Like I said, you are coming into neighborhoods of people of color predominantly. In Greater Mondawmin, a lot of our neighbors are homeowners. They are 60, 70, 80, 90 year-old people. They are not going anywhere. My concern is how is this going to affect them, their living, their health, the structure of their homes, and I just don't think it is fair it be brought into this community. I think you should just put it somewhere else. My question is people always try to put things in this community. Would you want it where you live? If you can say yes to that, then, maybe it's a good idea, but if you can say no to that, then, it shouldn't be done. Thank you. 3

THE HEARING OFFICER: Thank you. Let me mention again that there is a display area available tonight. Our project team staff are available. If you can check in at the registration table, they can direct you to the display area where you can view maps, as well as our printed information, including the Draft Environmental Impact Statement, and the staff can answer specific project questions regarding all of the alternatives associated with

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RESPONSES

away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

Response to Comment 2:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include

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RESPONSES

historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**.

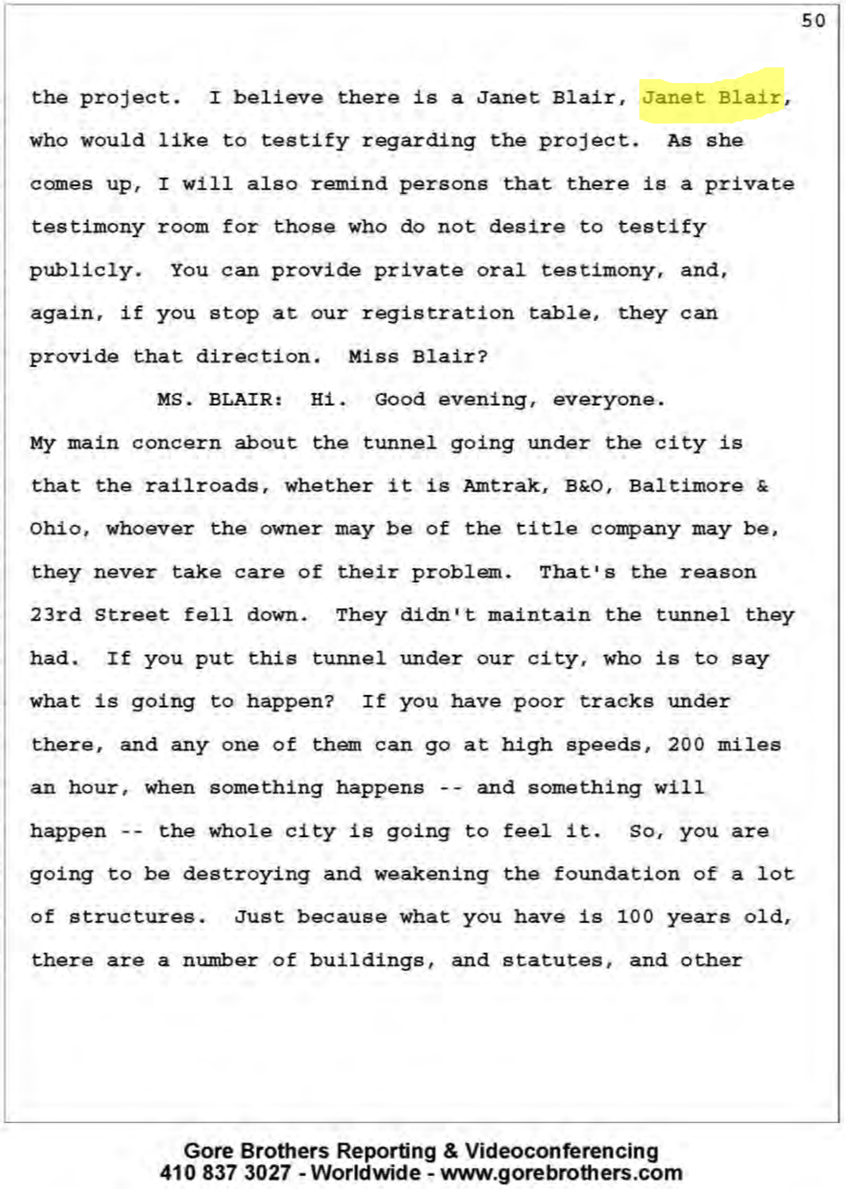
Response to Comment 3:
The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII.** These efforts are ongoing and are documented in this FEIS.

No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

COMMENTS

DEIS Comment 118:



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the project. I believe there is a Janet Blair, Janet Blair, who would like to testify regarding the project. As she comes up, I will also remind persons that there is a private testimony room for those who do not desire to testify publicly. You can provide private oral testimony, and, again, if you stop at our registration table, they can provide that direction. Miss Blair?

MS. BLAIR: Hi. Good evening, everyone.
My main concern about the tunnel going under the city is
1 that the railroads, whether it is Amtrak, B&O, Baltimore &
Ohio, whoever the owner may be of the title company may be,
they never take care of their problem. That's the reason
23rd Street fell down. They didn't maintain the tunnel they
had. If you put this tunnel under our city, who is to say
2 what is going to happen? If you have poor tracks under
there, and any one of them can go at high speeds, 200 miles
an hour, when something happens -- and something will
happen -- the whole city is going to feel it. So, you are
3 going to be destroying and weakening the foundation of a lot
of structures. Just because what you have is 100 years old,
there are a number of buildings, and statutes, and other

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RESPONSES

Response to Comment 1:
The Purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, which include:

- Reducing travel time through the B&P Tunnel and along the NEC,
- Accommodating existing and projected travel demand for intercity and commuter passenger services,
- Eliminating impediments to existing and projected operations along the NEC, and
- Providing operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

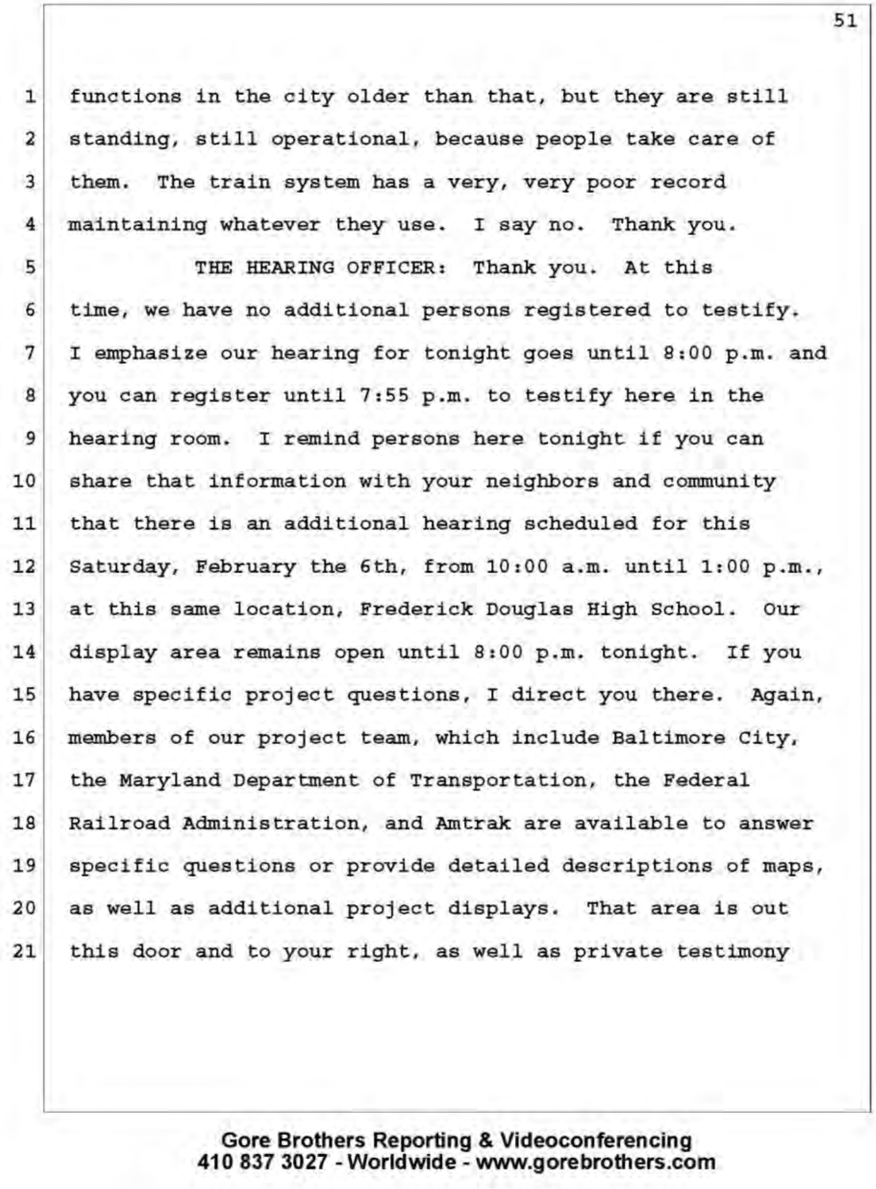
In addition, the existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

Response to Comment 2:
The new tunnels would be designed to optimize safety and modern standards. Amtrak and Norfolk Southern (NS) are anticipated to use existing fleets and newly acquired equipment in the tunnel. This equipment must meet federal standards for safe operations. In addition, the tunnel will be equipped with Automatic Train Control (ATC) and Positive Train Control (PTC) systems, which use computer systems to control the speed of trains within the tunnel.

Response to Comment 3:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be compensated for the cost of repairs.

COMMENTS

RESPONSES



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functions in the city older than that, but they are still standing, still operational, because people take care of them. The train system has a very, very poor record maintaining whatever they use. I say no. Thank you.

THE HEARING OFFICER: Thank you. At this time, we have no additional persons registered to testify. I emphasize our hearing for tonight goes until 8:00 p.m. and you can register until 7:55 p.m. to testify here in the hearing room. I remind persons here tonight if you can share that information with your neighbors and community that there is an additional hearing scheduled for this Saturday, February the 6th, from 10:00 a.m. until 1:00 p.m., at this same location, Frederick Douglas High School. Our display area remains open until 8:00 p.m. tonight. If you have specific project questions, I direct you there. Again, members of our project team, which include Baltimore City, the Maryland Department of Transportation, the Federal Railroad Administration, and Amtrak are available to answer specific questions or provide detailed descriptions of maps, as well as additional project displays. That area is out this door and to your right, as well as private testimony

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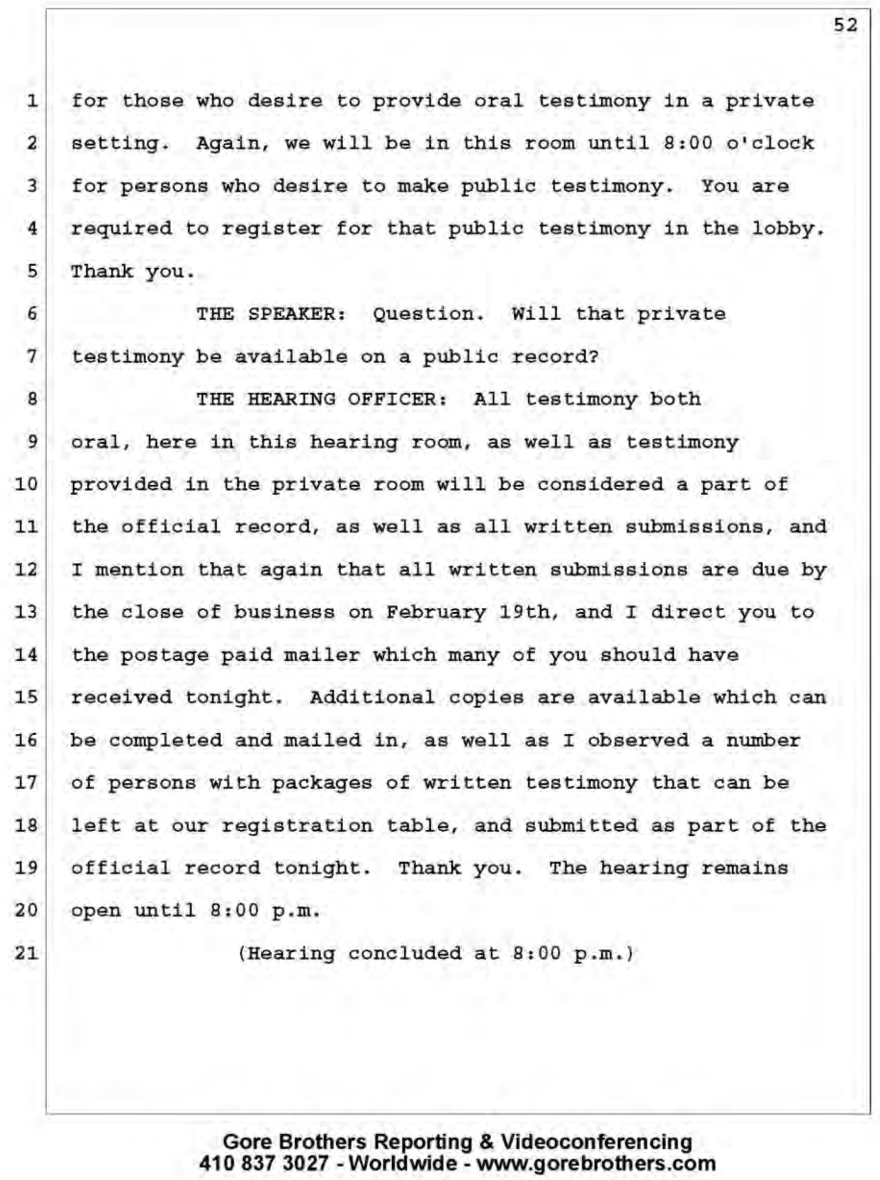
COMMENTS

RESPONSES



for those who desire to provide oral testimony in a private setting. Again, we will be in this room until 8:00 o'clock for persons who desire to make public testimony. You are required to register for that public testimony in the lobby. Thank you.

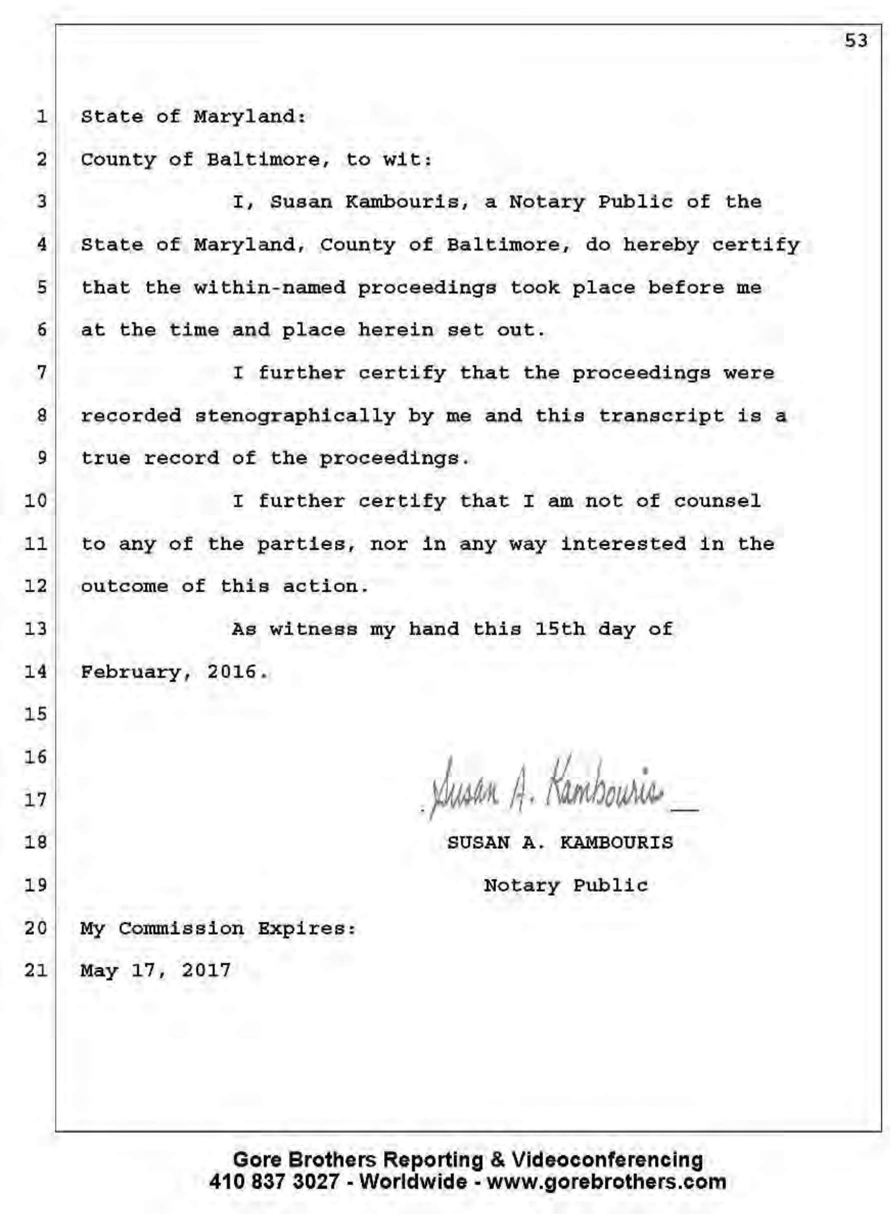
THE SPEAKER: Question. Will that private testimony be available on a public record?

THE HEARING OFFICER: All testimony both oral, here in this hearing room, as well as testimony provided in the private room will be considered a part of the official record, as well as all written submissions, and I mention that again that all written submissions are due by the close of business on February 19th, and I direct you to the postage paid mailer which many of you should have received tonight. Additional copies are available which can be completed and mailed in, as well as I observed a number of persons with packages of written testimony that can be left at our registration table, and submitted as part of the official record tonight. Thank you. The hearing remains open until 8:00 p.m.

(Hearing concluded at 8:00 p.m.)

COMMENTS

RESPONSES



State of Maryland:

County of Baltimore, to wit:

I, Susan Kambouris, a Notary Public of the State of Maryland, County of Baltimore, do hereby certify that the within-named proceedings took place before me at the time and place herein set out.

I further certify that the proceedings were recorded stenographically by me and this transcript is a true record of the proceedings.

I further certify that I am not of counsel to any of the parties, nor in any way interested in the outcome of this action.

As witness my hand this 15th day of February, 2016.

Susan A. Kambouris

SUSAN A. KAMBOURIS

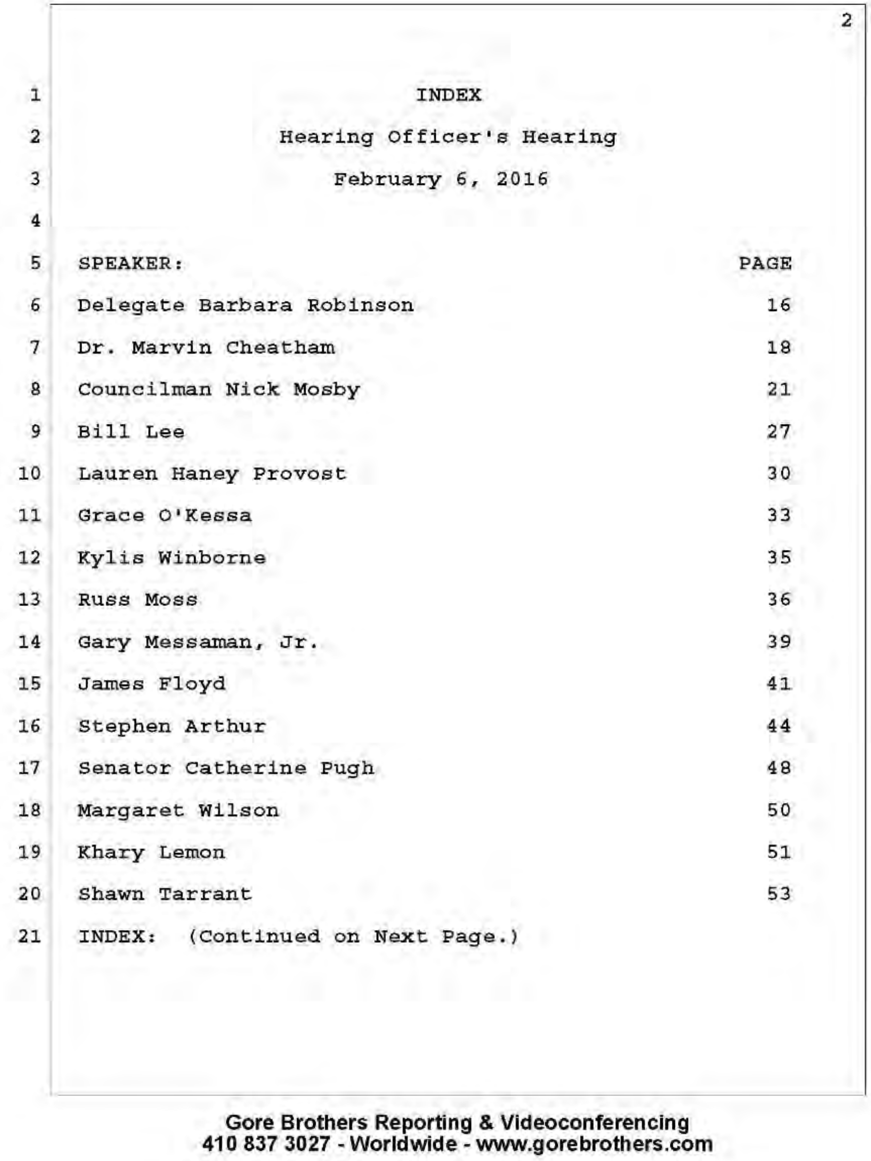
Notary Public

My Commission Expires:

May 17, 2017

COMMENTS

RESPONSES



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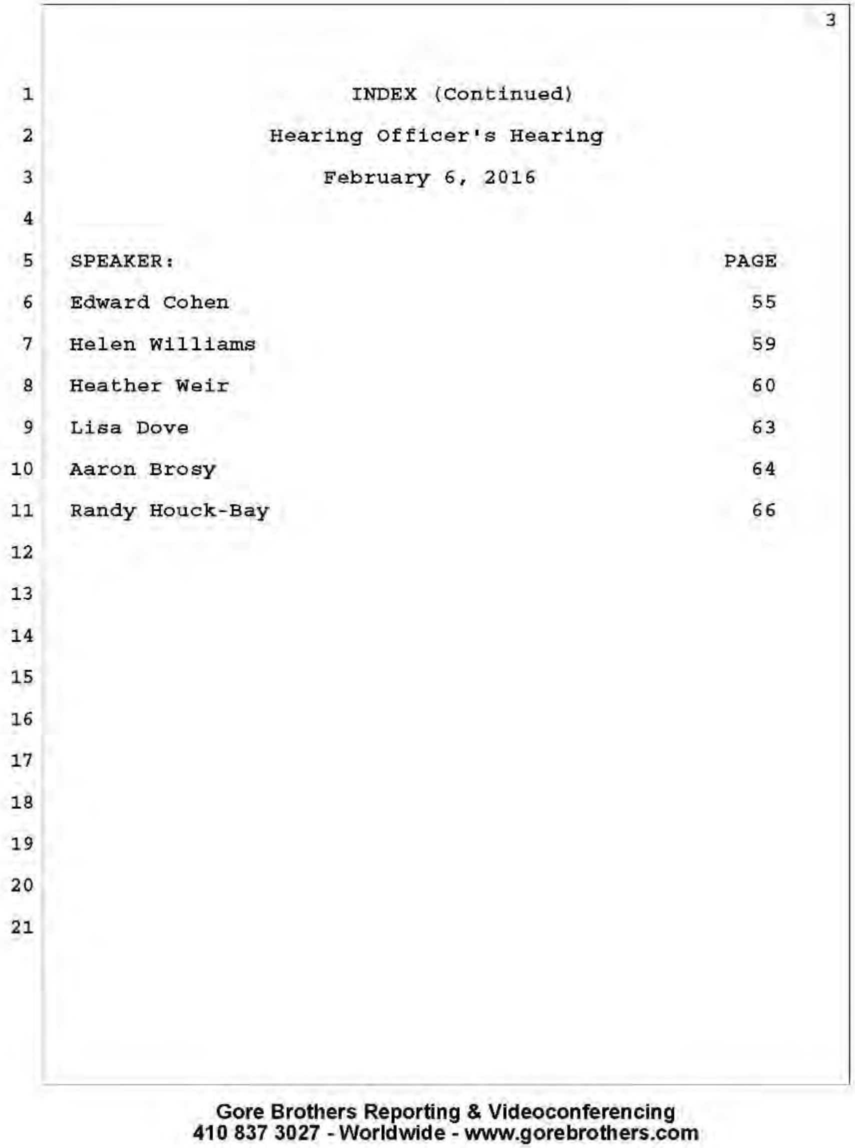

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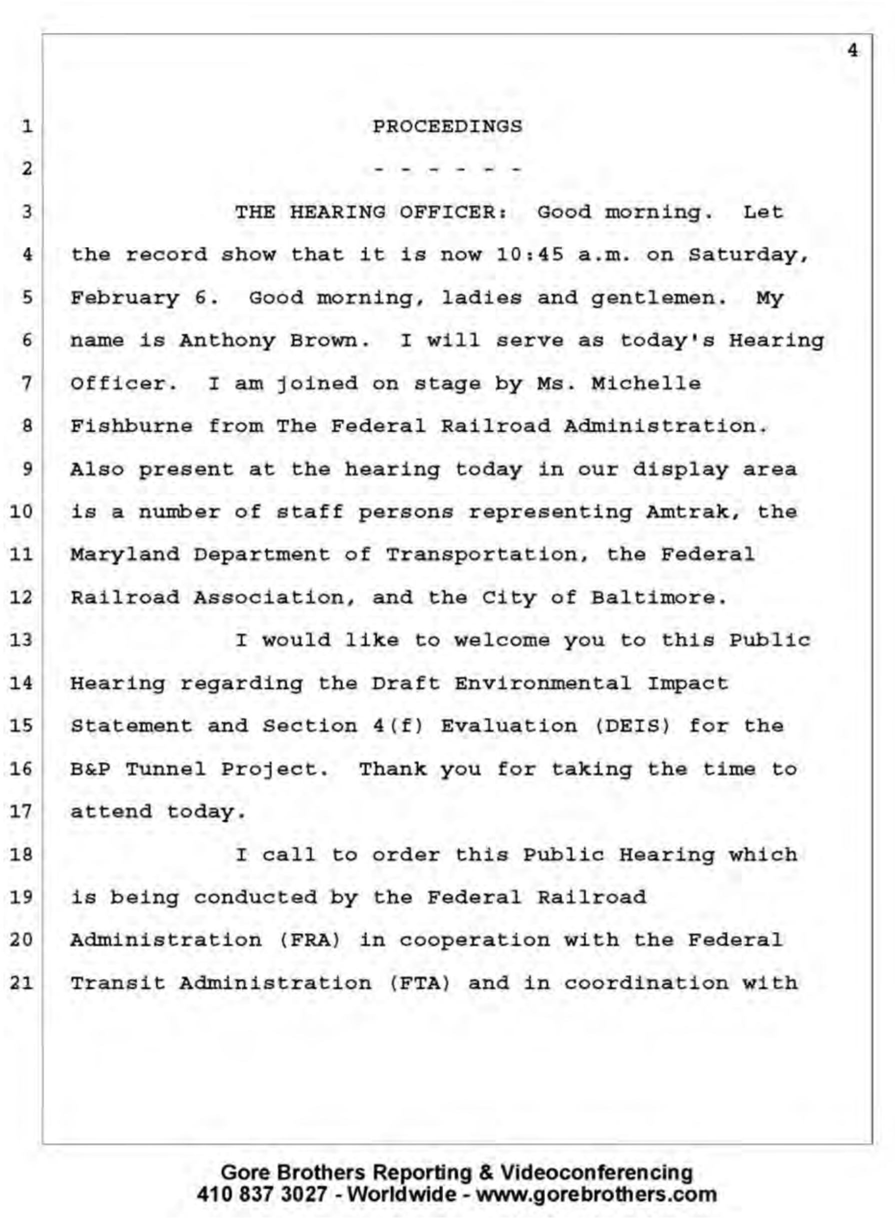

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PROCEEDINGS

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THE HEARING OFFICER: Good morning. Let the record show that it is now 10:45 a.m. on Saturday, February 6. Good morning, ladies and gentlemen. My name is Anthony Brown. I will serve as today's Hearing Officer. I am joined on stage by Ms. Michelle Fishburne from The Federal Railroad Administration. Also present at the hearing today in our display area is a number of staff persons representing Amtrak, the Maryland Department of Transportation, the Federal Railroad Association, and the City of Baltimore.

I would like to welcome you to this Public Hearing regarding the Draft Environmental Impact Statement and Section 4(f) Evaluation (DEIS) for the B&P Tunnel Project. Thank you for taking the time to attend today.

I call to order this Public Hearing which is being conducted by the Federal Railroad Administration (FRA) in cooperation with the Federal Transit Administration (FTA) and in coordination with

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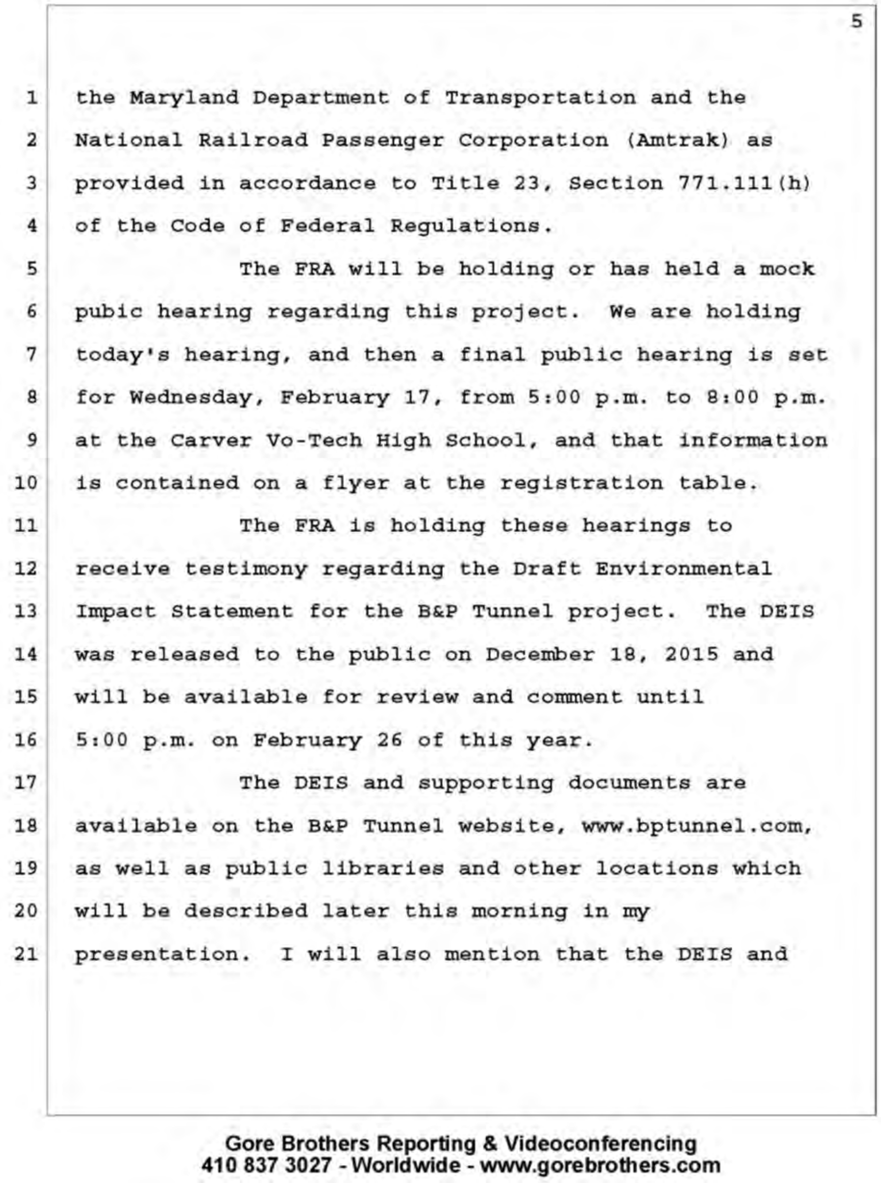
COMMENTS

RESPONSES



the Maryland Department of Transportation and the National Railroad Passenger Corporation (Amtrak) as provided in accordance to Title 23, Section 771.111(h) of the Code of Federal Regulations.

The FRA will be holding or has held a mock pubic hearing regarding this project. We are holding today's hearing, and then a final public hearing is set for Wednesday, February 17, from 5:00 p.m. to 8:00 p.m. at the Carver Vo-Tech High School, and that information is contained on a flyer at the registration table.

The FRA is holding these hearings to receive testimony regarding the Draft Environmental Impact Statement for the B&P Tunnel project. The DEIS was released to the public on December 18, 2015 and will be available for review and comment until 5:00 p.m. on February 26 of this year.

The DEIS and supporting documents are available on the B&P Tunnel website, www.bptunnel.com, as well as public libraries and other locations which will be described later this morning in my presentation. I will also mention that the DEIS and

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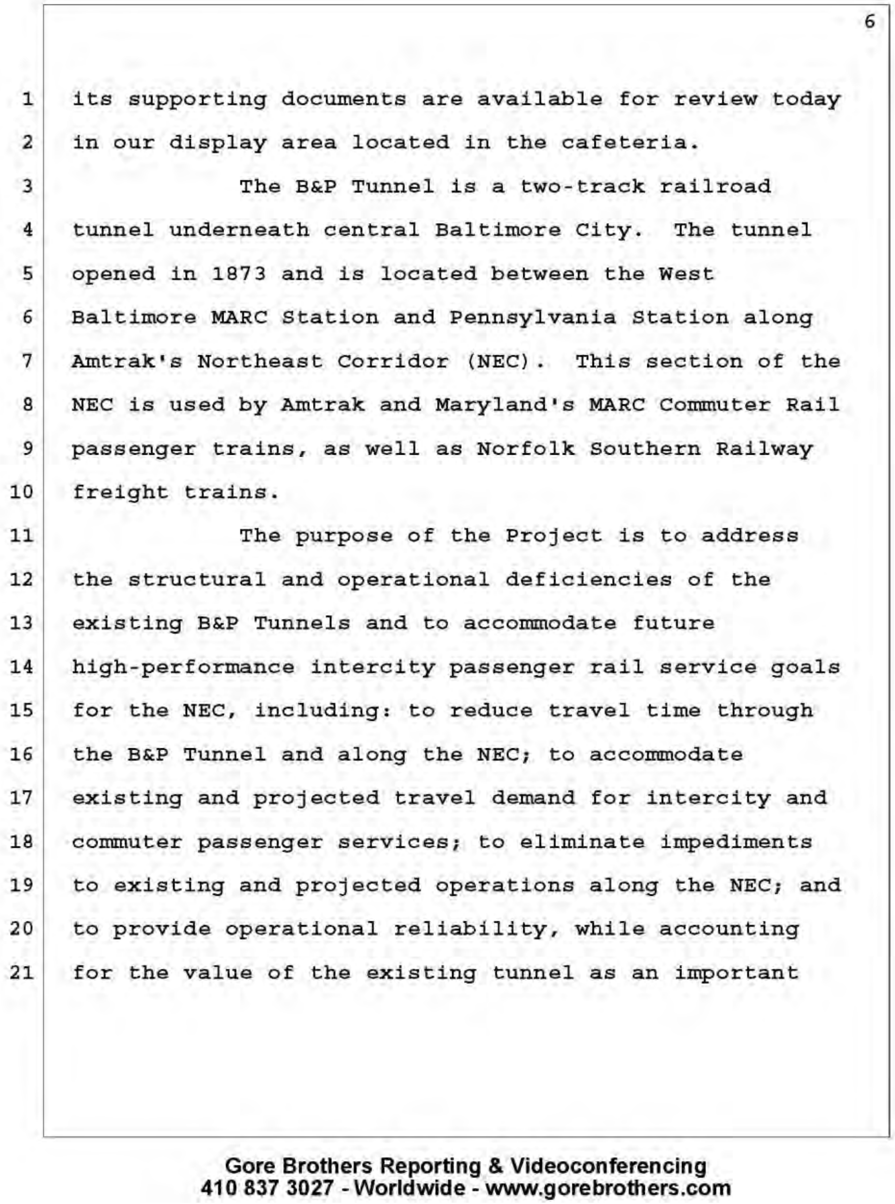

its supporting documents are available for review today in our display area located in the cafeteria.

The B&P Tunnel is a two-track railroad tunnel underneath central Baltimore City. The tunnel opened in 1873 and is located between the West Baltimore MARC Station and Pennsylvania Station along Amtrak's Northeast Corridor (NEC). This section of the NEC is used by Amtrak and Maryland's MARC Commuter Rail passenger trains, as well as Norfolk Southern Railway freight trains.

The purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnels and to accommodate future high-performance intercity passenger rail service goals for the NEC, including: to reduce travel time through the B&P Tunnel and along the NEC; to accommodate existing and projected travel demand for intercity and commuter passenger services; to eliminate impediments to existing and projected operations along the NEC; and to provide operational reliability, while accounting for the value of the existing tunnel as an important

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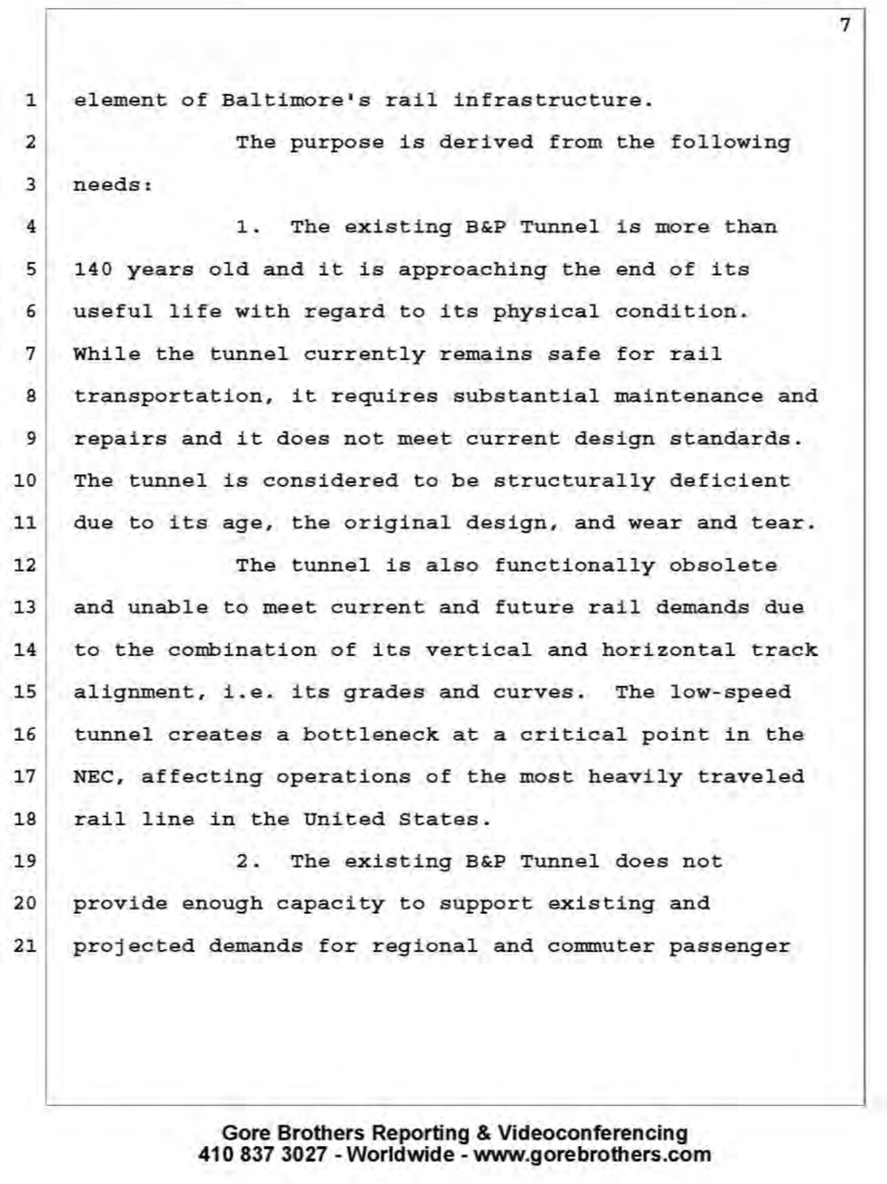


element of Baltimore's rail infrastructure.

The purpose is derived from the following needs:

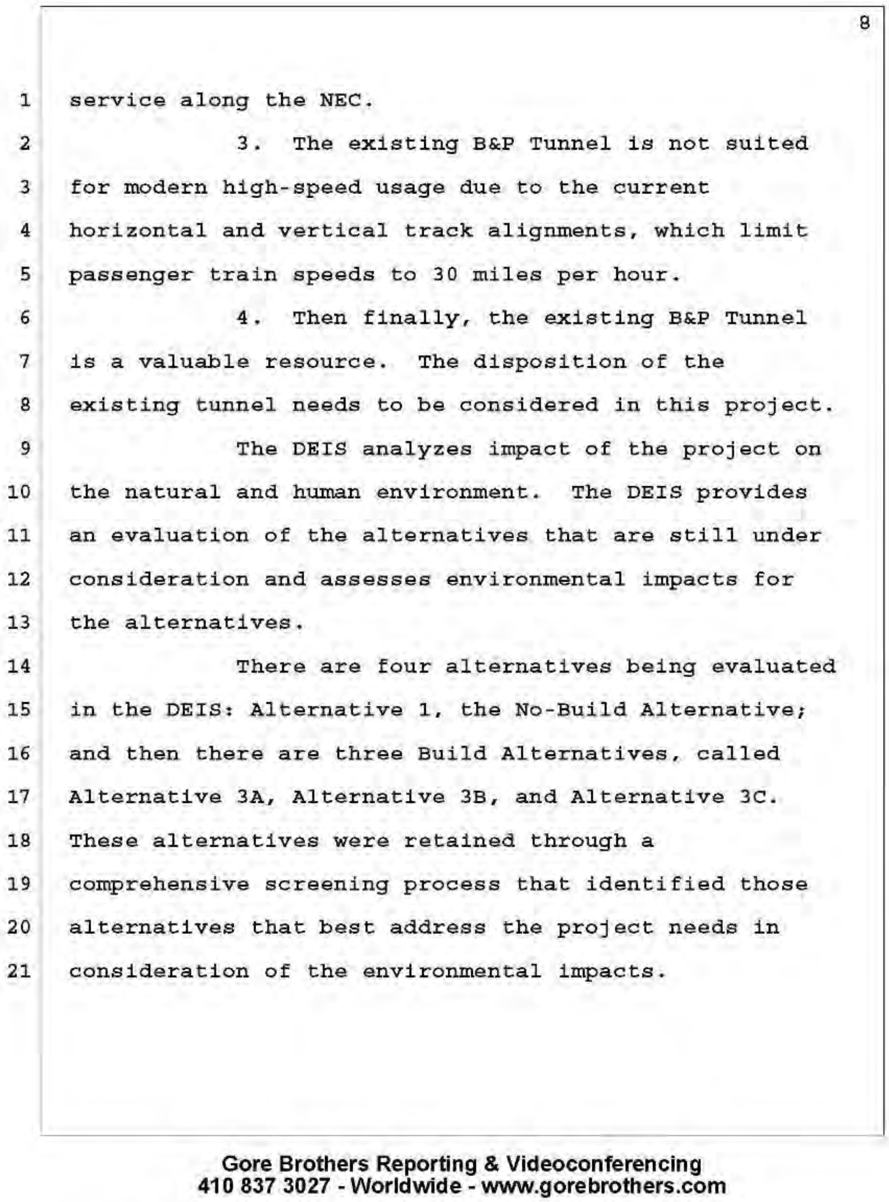
1. The existing B&P Tunnel is more than 140 years old and it is approaching the end of its useful life with regard to its physical condition. While the tunnel currently remains safe for rail transportation, it requires substantial maintenance and repairs and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear.

The tunnel is also functionally obsolete and unable to meet current and future rail demands due to the combination of its vertical and horizontal track alignment, i.e. its grades and curves. The low-speed tunnel creates a bottleneck at a critical point in the NEC, affecting operations of the most heavily traveled rail line in the United States.

2. The existing B&P Tunnel does not provide enough capacity to support existing and projected demands for regional and commuter passenger

COMMENTS

RESPONSES



service along the NEC.

3. The existing B&P Tunnel is not suited for modern high-speed usage due to the current horizontal and vertical track alignments, which limit passenger train speeds to 30 miles per hour.

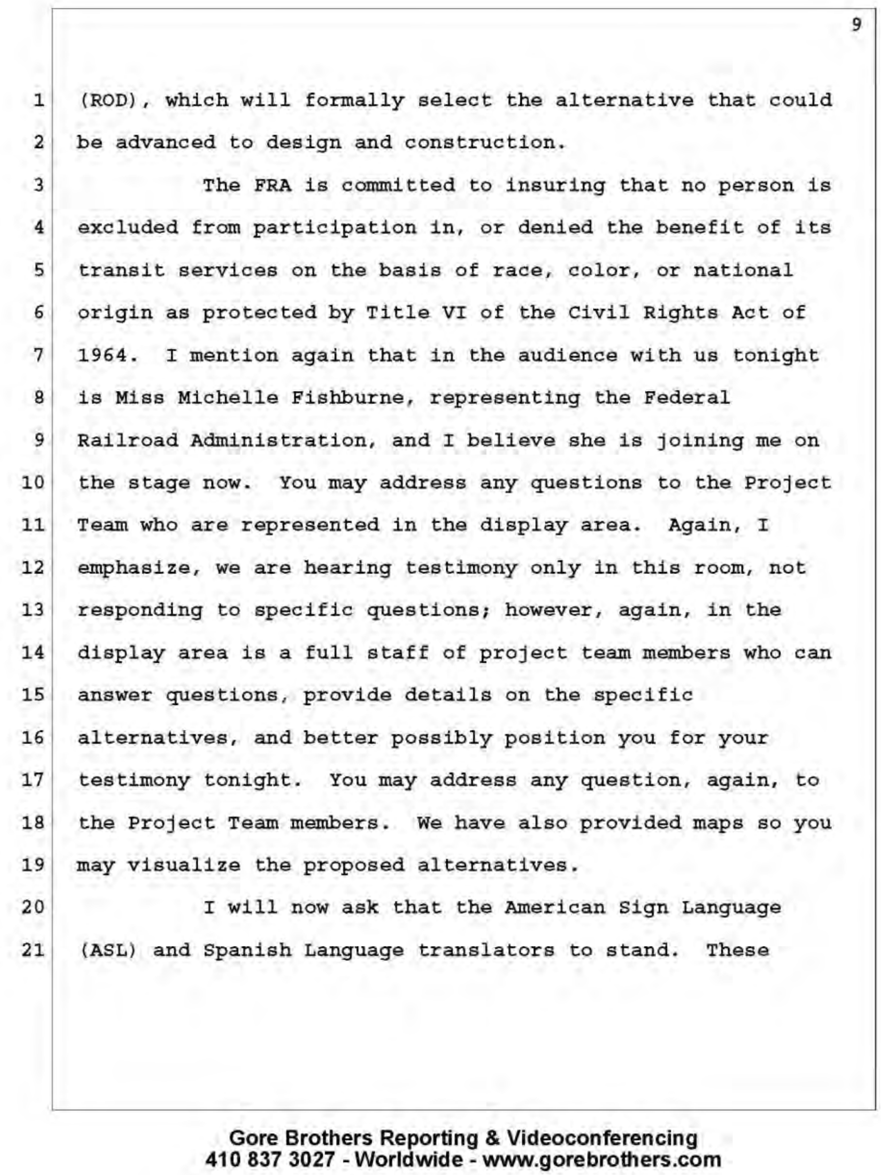
4. Then finally, the existing B&P Tunnel is a valuable resource. The disposition of the existing tunnel needs to be considered in this project.

The DEIS analyzes impact of the project on the natural and human environment. The DEIS provides an evaluation of the alternatives that are still under consideration and assesses environmental impacts for the alternatives.

There are four alternatives being evaluated in the DEIS: Alternative 1, the No-Build Alternative; and then there are three Build Alternatives, called Alternative 3A, Alternative 3B, and Alternative 3C. These alternatives were retained through a comprehensive screening process that identified those alternatives that best address the project needs in consideration of the environmental impacts.

COMMENTS

RESPONSES



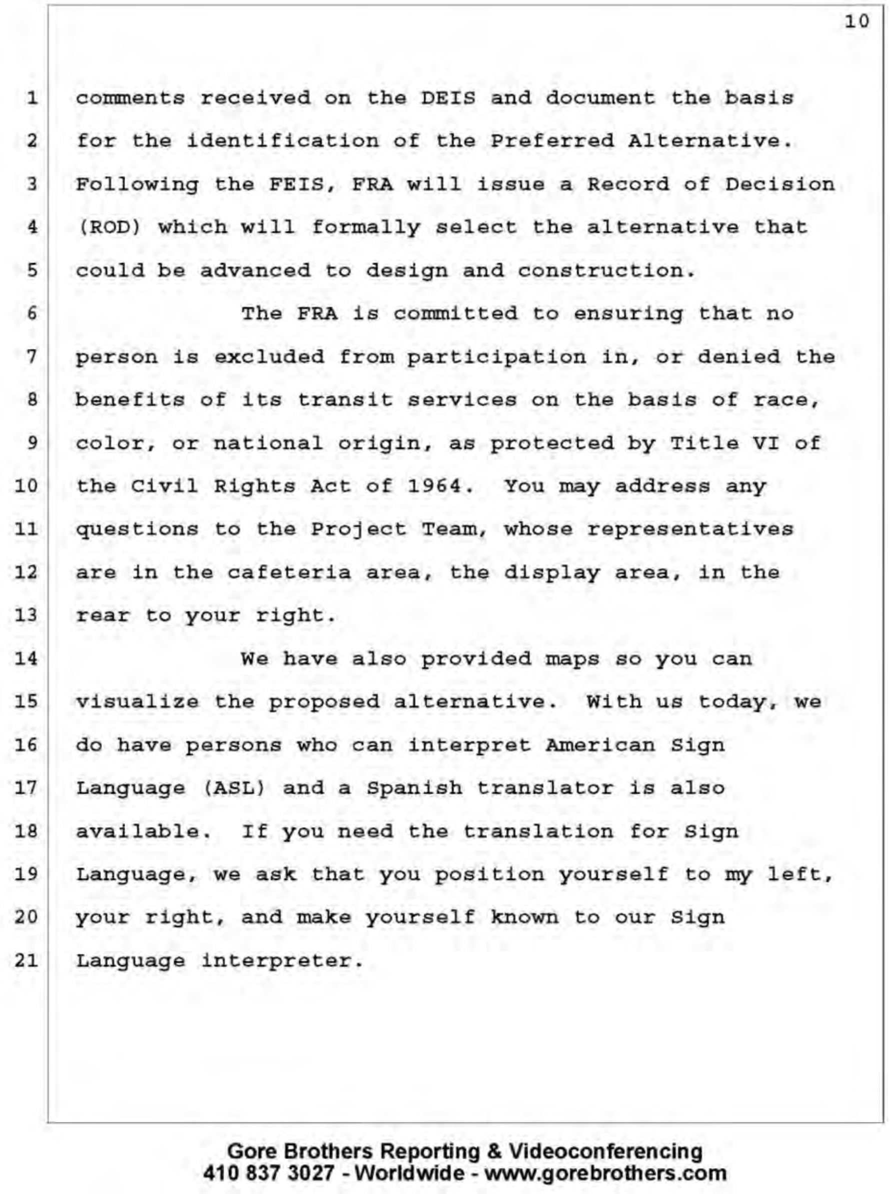
(ROD), which will formally select the alternative that could be advanced to design and construction.

The FRA is committed to insuring that no person is excluded from participation in, or denied the benefit of its transit services on the basis of race, color, or national origin as protected by Title VI of the Civil Rights Act of 1964. I mention again that in the audience with us tonight is Miss Michelle Fishburne, representing the Federal Railroad Administration, and I believe she is joining me on the stage now. You may address any questions to the Project Team who are represented in the display area. Again, I emphasize, we are hearing testimony only in this room, not responding to specific questions; however, again, in the display area is a full staff of project team members who can answer questions, provide details on the specific alternatives, and better possibly position you for your testimony tonight. You may address any question, again, to the Project Team members. We have also provided maps so you may visualize the proposed alternatives.

I will now ask that the American Sign Language (ASL) and Spanish Language translators to stand. These

COMMENTS

RESPONSES



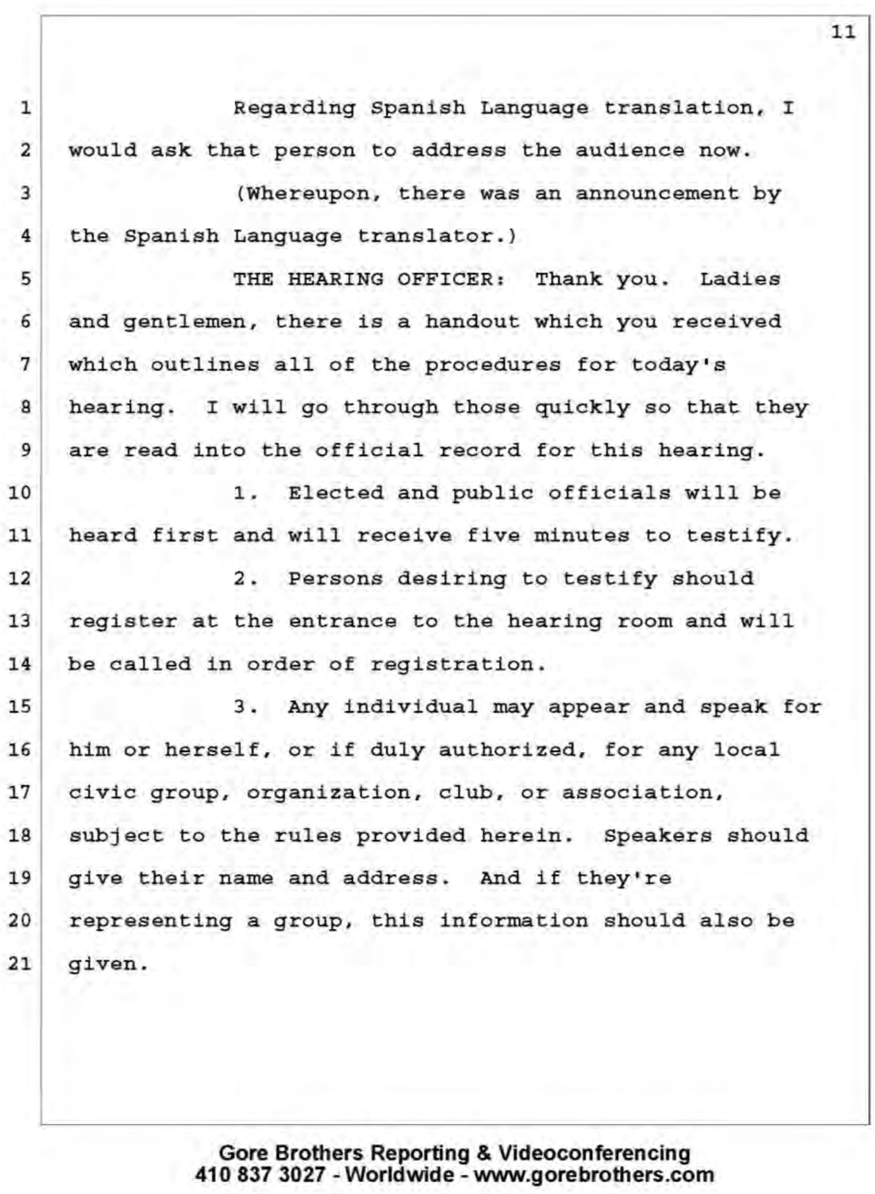
comments received on the DEIS and document the basis for the identification of the Preferred Alternative. Following the FEIS, FRA will issue a Record of Decision (ROD) which will formally select the alternative that could be advanced to design and construction.

The FRA is committed to ensuring that no person is excluded from participation in, or denied the benefits of its transit services on the basis of race, color, or national origin, as protected by Title VI of the Civil Rights Act of 1964. You may address any questions to the Project Team, whose representatives are in the cafeteria area, the display area, in the rear to your right.

We have also provided maps so you can visualize the proposed alternative. With us today, we do have persons who can interpret American Sign Language (ASL) and a Spanish translator is also available. If you need the translation for Sign Language, we ask that you position yourself to my left, your right, and make yourself known to our Sign Language interpreter.

COMMENTS

RESPONSES



Regarding Spanish Language translation, I would ask that person to address the audience now.

(Whereupon, there was an announcement by the Spanish Language translator.)

THE HEARING OFFICER: Thank you. Ladies and gentlemen, there is a handout which you received which outlines all of the procedures for today's hearing. I will go through those quickly so that they are read into the official record for this hearing.

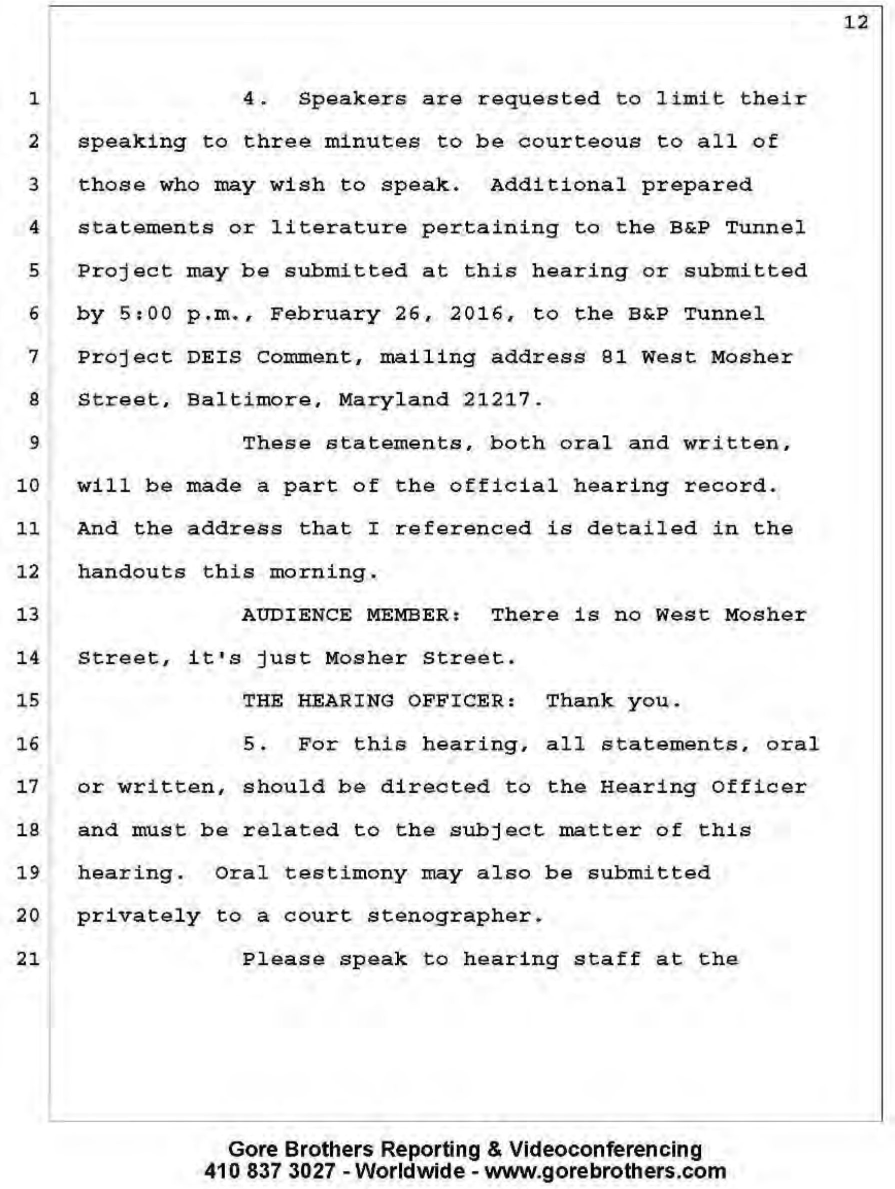
1. Elected and public officials will be heard first and will receive five minutes to testify.

2. Persons desiring to testify should register at the entrance to the hearing room and will be called in order of registration.

3. Any individual may appear and speak for him or herself, or if duly authorized, for any local civic group, organization, club, or association, subject to the rules provided herein. Speakers should give their name and address. And if they're representing a group, this information should also be given.

COMMENTS

RESPONSES



4. Speakers are requested to limit their speaking to three minutes to be courteous to all of those who may wish to speak. Additional prepared statements or literature pertaining to the B&P Tunnel Project may be submitted at this hearing or submitted by 5:00 p.m., February 26, 2016, to the B&P Tunnel Project DEIS Comment, mailing address 81 West Mosher Street, Baltimore, Maryland 21217.

These statements, both oral and written, will be made a part of the official hearing record. And the address that I referenced is detailed in the handouts this morning.

AUDIENCE MEMBER: There is no West Mosher Street, it's just Mosher Street.

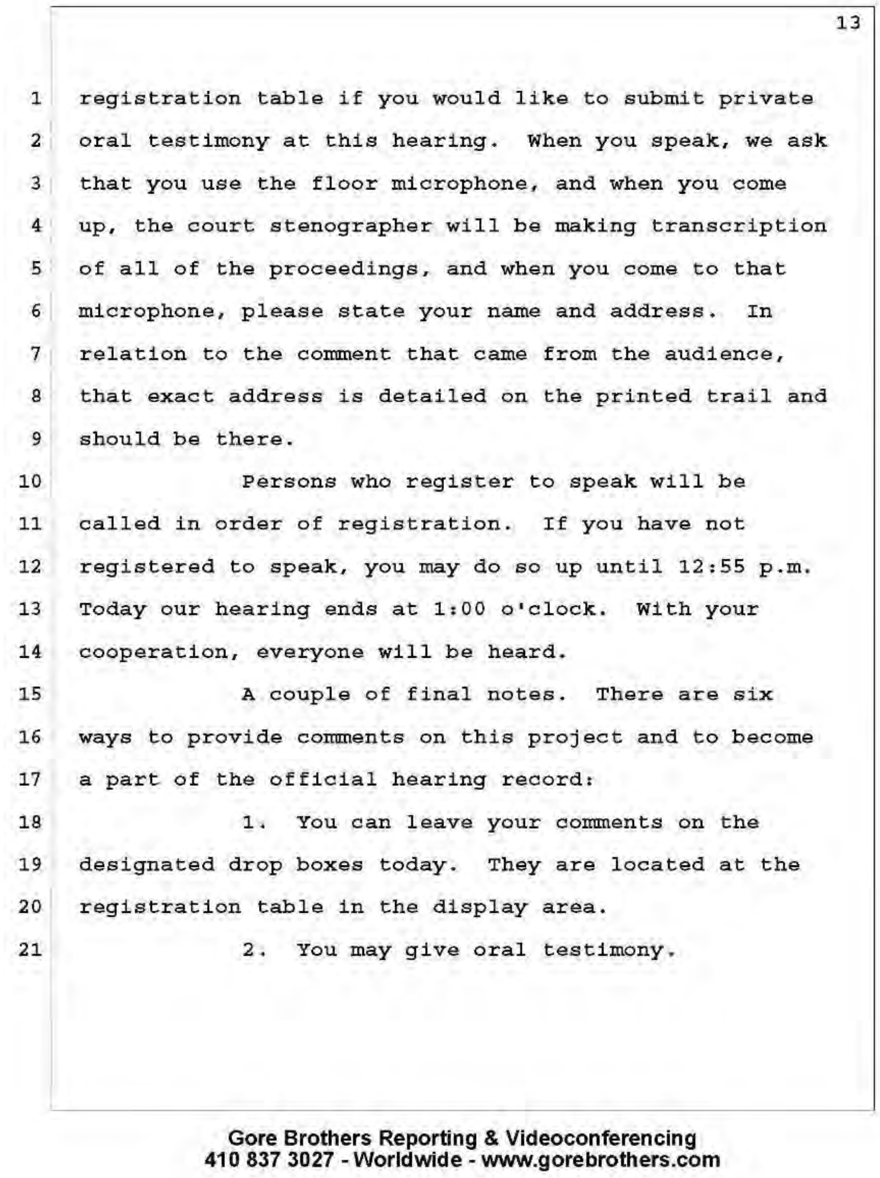
THE HEARING OFFICER: Thank you.

5. For this hearing, all statements, oral or written, should be directed to the Hearing Officer and must be related to the subject matter of this hearing. Oral testimony may also be submitted privately to a court stenographer.

Please speak to hearing staff at the

COMMENTS

RESPONSES



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registration table if you would like to submit private oral testimony at this hearing. When you speak, we ask that you use the floor microphone, and when you come up, the court stenographer will be making transcription of all of the proceedings, and when you come to that microphone, please state your name and address. In relation to the comment that came from the audience, that exact address is detailed on the printed trail and should be there.

Persons who register to speak will be called in order of registration. If you have not registered to speak, you may do so up until 12:55 p.m. Today our hearing ends at 1:00 o'clock. With your cooperation, everyone will be heard.

A couple of final notes. There are six ways to provide comments on this project and to become a part of the official hearing record:

1. You can leave your comments on the designated drop boxes today. They are located at the registration table in the display area.

2. You may give oral testimony.

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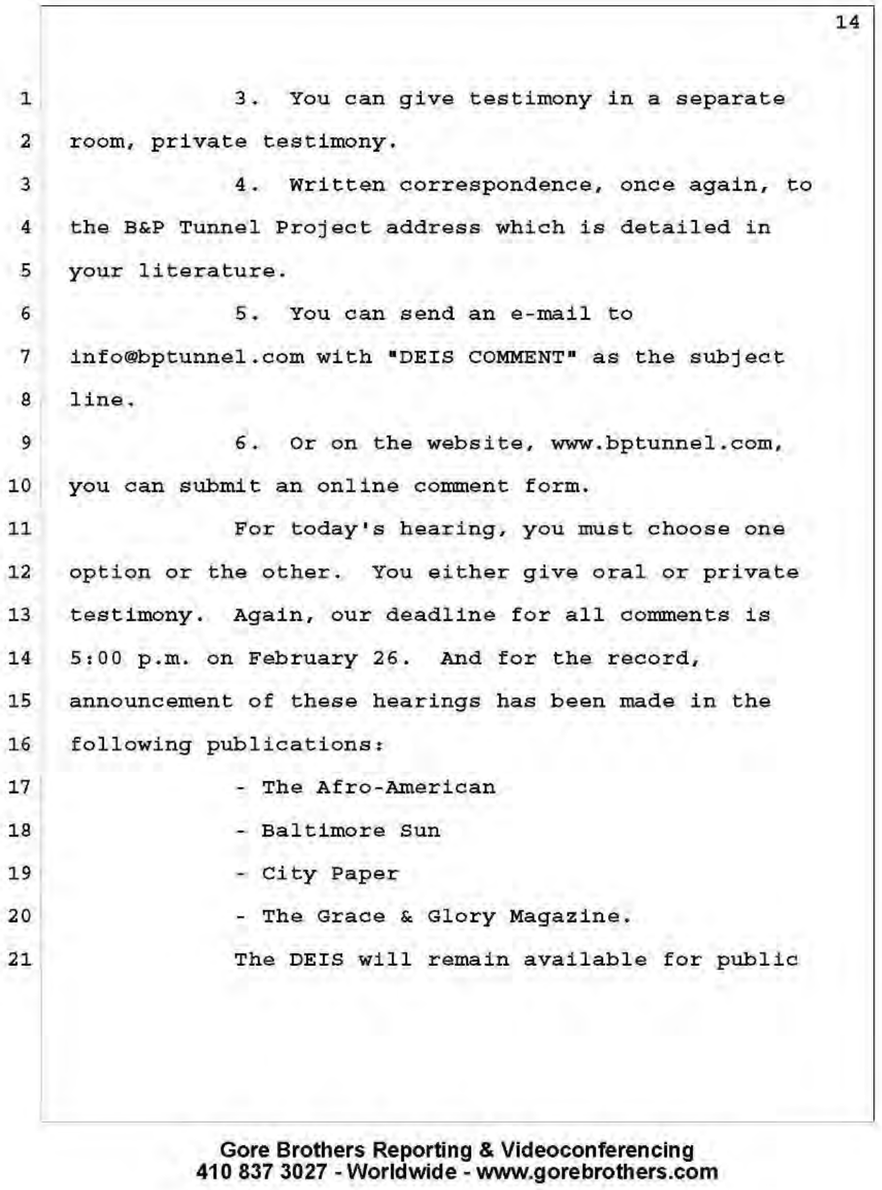
COMMENTS

RESPONSES



3. You can give testimony in a separate room, private testimony.

4. Written correspondence, once again, to the B&P Tunnel Project address which is detailed in your literature.

5. You can send an e-mail to info@bptunnel.com with "DEIS COMMENT" as the subject line.

6. Or on the website, www.bptunnel.com, you can submit an online comment form.

For today's hearing, you must choose one option or the other. You either give oral or private testimony. Again, our deadline for all comments is 5:00 p.m. on February 26. And for the record, announcement of these hearings has been made in the following publications:

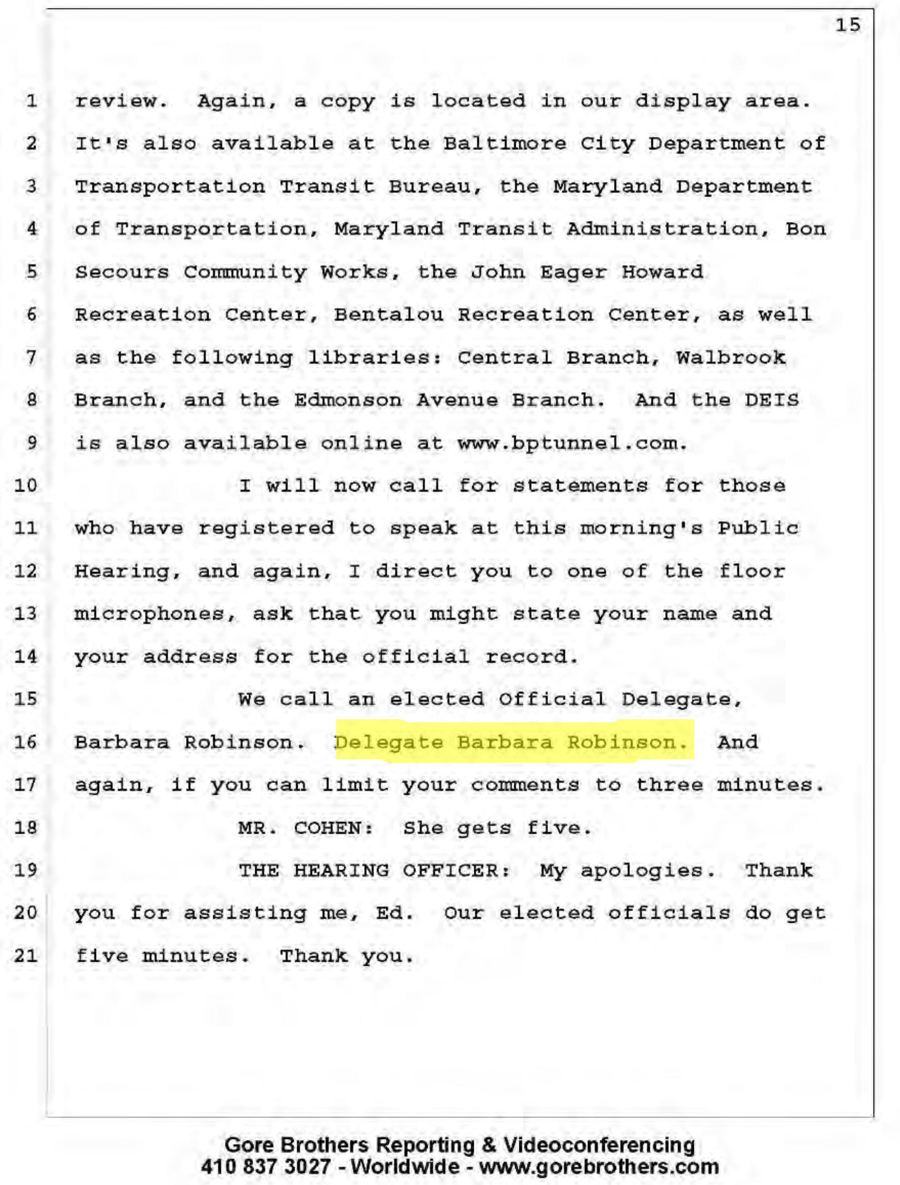
- The Afro-American
- Baltimore Sun
- City Paper
- The Grace & Glory Magazine.

The DEIS will remain available for public

COMMENTS

RESPONSES

DEIS Comment 119:



review. Again, a copy is located in our display area. It's also available at the Baltimore City Department of Transportation Transit Bureau, the Maryland Department of Transportation, Maryland Transit Administration, Bon Secours Community Works, the John Eager Howard Recreation Center, Bentalou Recreation Center, as well as the following libraries: Central Branch, Walbrook Branch, and the Edmonson Avenue Branch. And the DEIS is also available online at www.bptunnel.com.

I will now call for statements for those who have registered to speak at this morning's Public Hearing, and again, I direct you to one of the floor microphones, ask that you might state your name and your address for the official record.

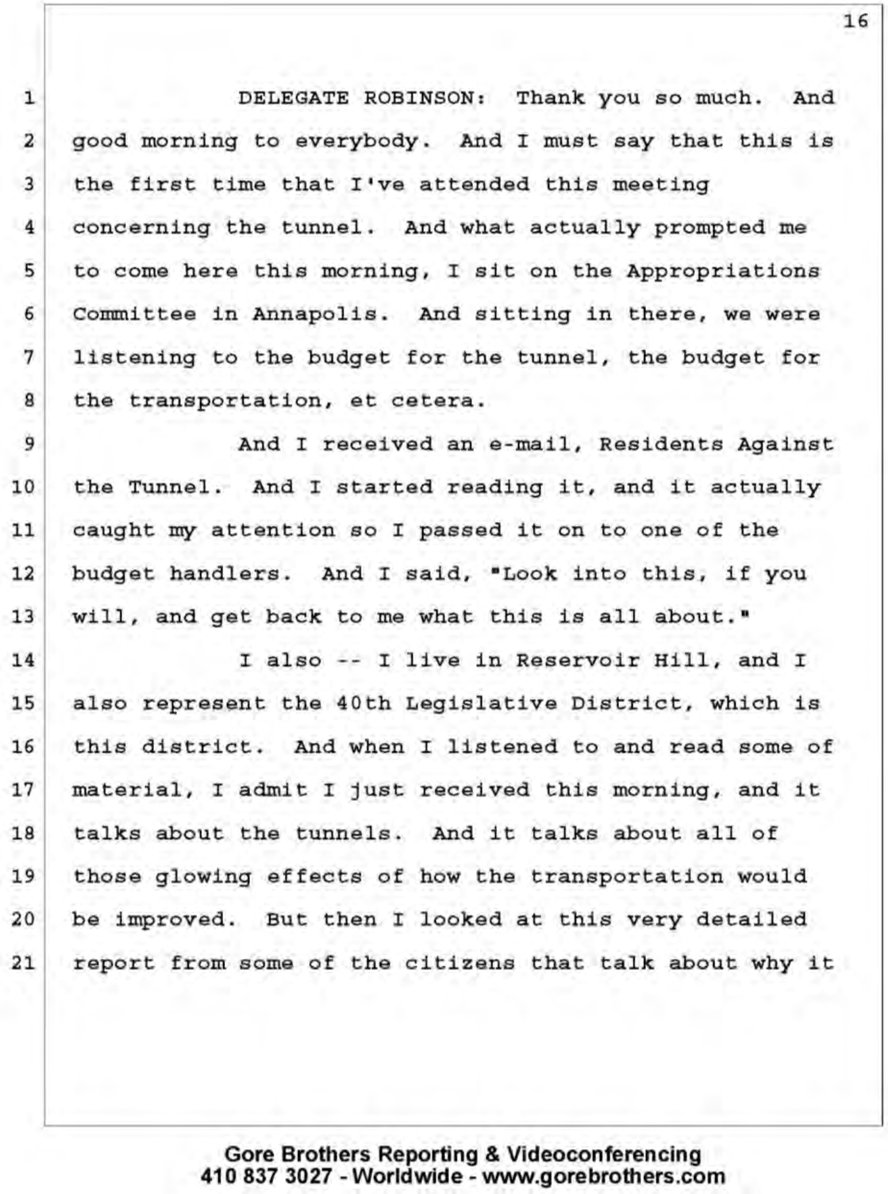
We call an elected Official Delegate, Barbara Robinson. Delegate Barbara Robinson. And again, if you can limit your comments to three minutes.

MR. COHEN: She gets five.

THE HEARING OFFICER: My apologies. Thank you for assisting me, Ed. Our elected officials do get five minutes. Thank you.

COMMENTS

RESPONSES

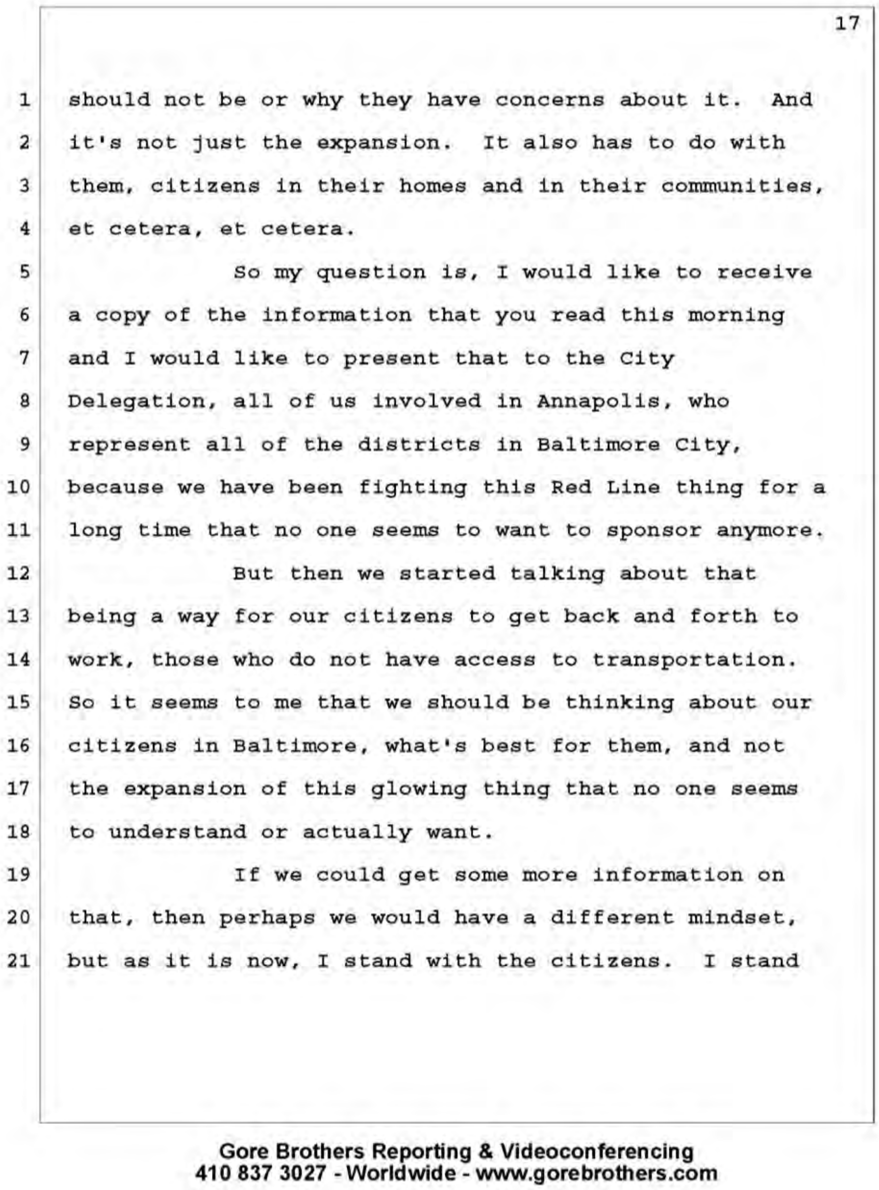


DELEGATE ROBINSON: Thank you so much. And good morning to everybody. And I must say that this is the first time that I've attended this meeting concerning the tunnel. And what actually prompted me to come here this morning, I sit on the Appropriations Committee in Annapolis. And sitting in there, we were listening to the budget for the tunnel, the budget for the transportation, et cetera.

And I received an e-mail, Residents Against the Tunnel. And I started reading it, and it actually caught my attention so I passed it on to one of the budget handlers. And I said, "Look into this, if you will, and get back to me what this is all about."

I also -- I live in Reservoir Hill, and I also represent the 40th Legislative District, which is this district. And when I listened to and read some of material, I admit I just received this morning, and it talks about the tunnels. And it talks about all of those glowing effects of how the transportation would be improved. But then I looked at this very detailed report from some of the citizens that talk about why it

COMMENTS



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should not be or why they have concerns about it. And it's not just the expansion. It also has to do with them, citizens in their homes and in their communities, et cetera, et cetera.

So my question is, I would like to receive a copy of the information that you read this morning and I would like to present that to the City Delegation, all of us involved in Annapolis, who represent all of the districts in Baltimore City, because we have been fighting this Red Line thing for a long time that no one seems to want to sponsor anymore.

But then we started talking about that being a way for our citizens to get back and forth to work, those who do not have access to transportation. So it seems to me that we should be thinking about our citizens in Baltimore, what's best for them, and not the expansion of this glowing thing that no one seems to understand or actually want.

1

If we could get some more information on that, then perhaps we would have a different mindset, but as it is now, I stand with the citizens. I stand

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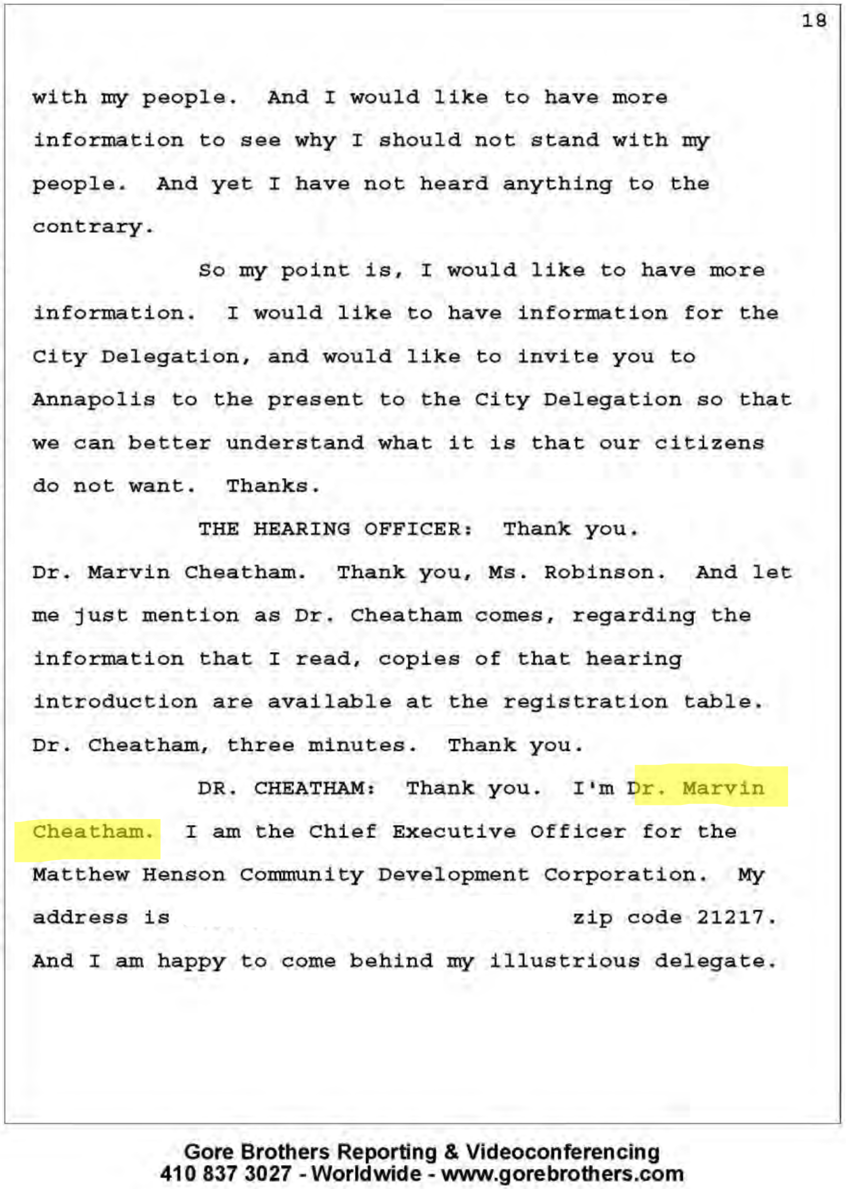
RESPONSES

Response to Comment 1:
The Project Team has engaged in extensive public outreach throughout the development of the Project, including holding three public open houses and ten community meetings where the public was given the opportunity to learn about project development and engage in discussion with the Project Team. In addition to these meetings, the Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS. Details of outreach are described in **Chapter VI** as well as **Chapter VIII**.

COMMENTS | **RESPONSES**

DEIS Comment 120:



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with my people. And I would like to have more information to see why I should not stand with my people. And yet I have not heard anything to the contrary.

So my point is, I would like to have more information. I would like to have information for the City Delegation, and would like to invite you to Annapolis to the present to the City Delegation so that we can better understand what it is that our citizens do not want. Thanks.

THE HEARING OFFICER: Thank you. Dr. Marvin Cheatham. Thank you, Ms. Robinson. And let me just mention as Dr. Cheatham comes, regarding the information that I read, copies of that hearing introduction are available at the registration table. Dr. Cheatham, three minutes. Thank you.

DR. CHEATHAM: Thank you. I'm Dr. Marvin Cheatham. I am the Chief Executive Officer for the Matthew Henson Community Development Corporation. My address is zip code 21217. And I am happy to come behind my illustrious delegate.

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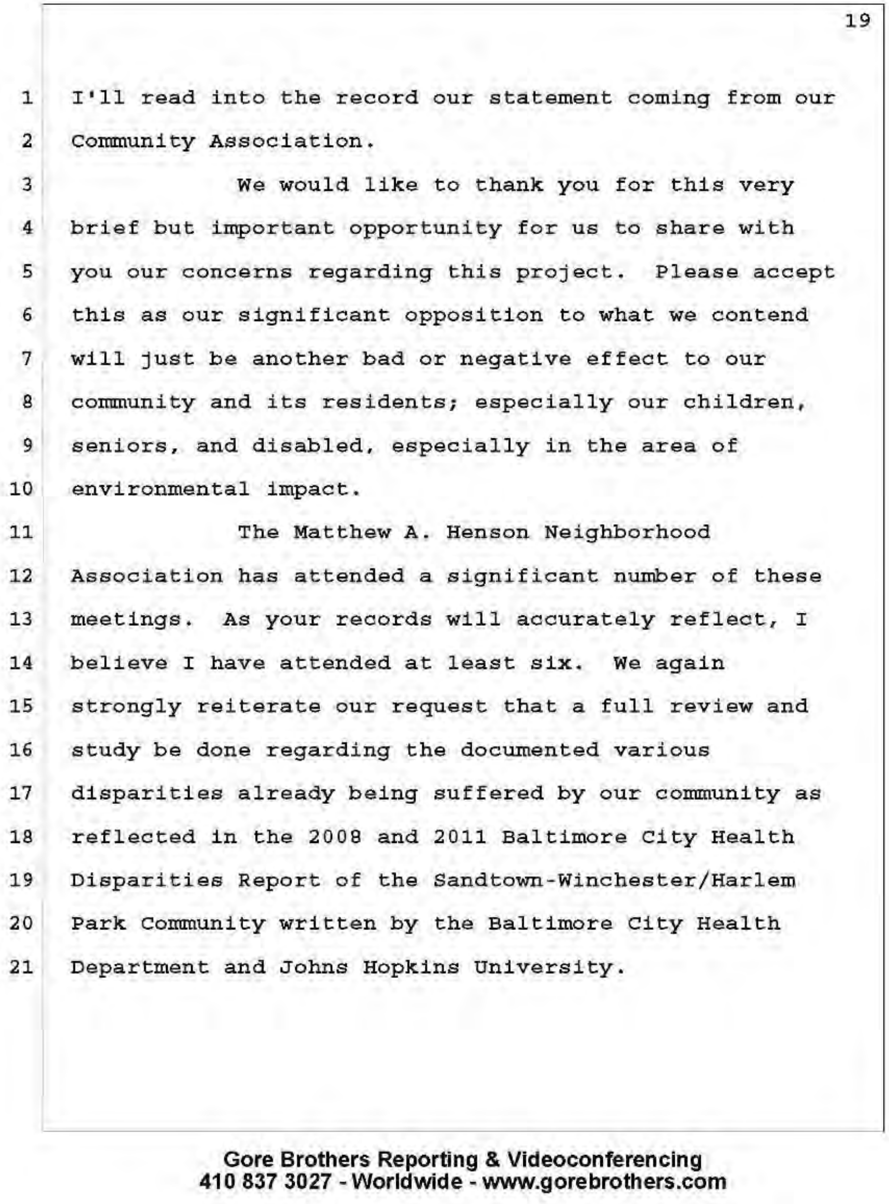
COMMENTS



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I'll read into the record our statement coming from our Community Association.

We would like to thank you for this very brief but important opportunity for us to share with you our concerns regarding this project. Please accept this as our significant opposition to what we contend will just be another bad or negative effect to our community and its residents; especially our children, seniors, and disabled, especially in the area of environmental impact.

The Matthew A. Henson Neighborhood Association has attended a significant number of these meetings. As your records will accurately reflect, I believe I have attended at least six. We again strongly reiterate our request that a full review and study be done regarding the documented various disparities already being suffered by our community as reflected in the 2008 and 2011 Baltimore City Health Disparities Report of the Sandtown-Winchester/Harlem Park Community written by the Baltimore City Health Department and Johns Hopkins University. 1

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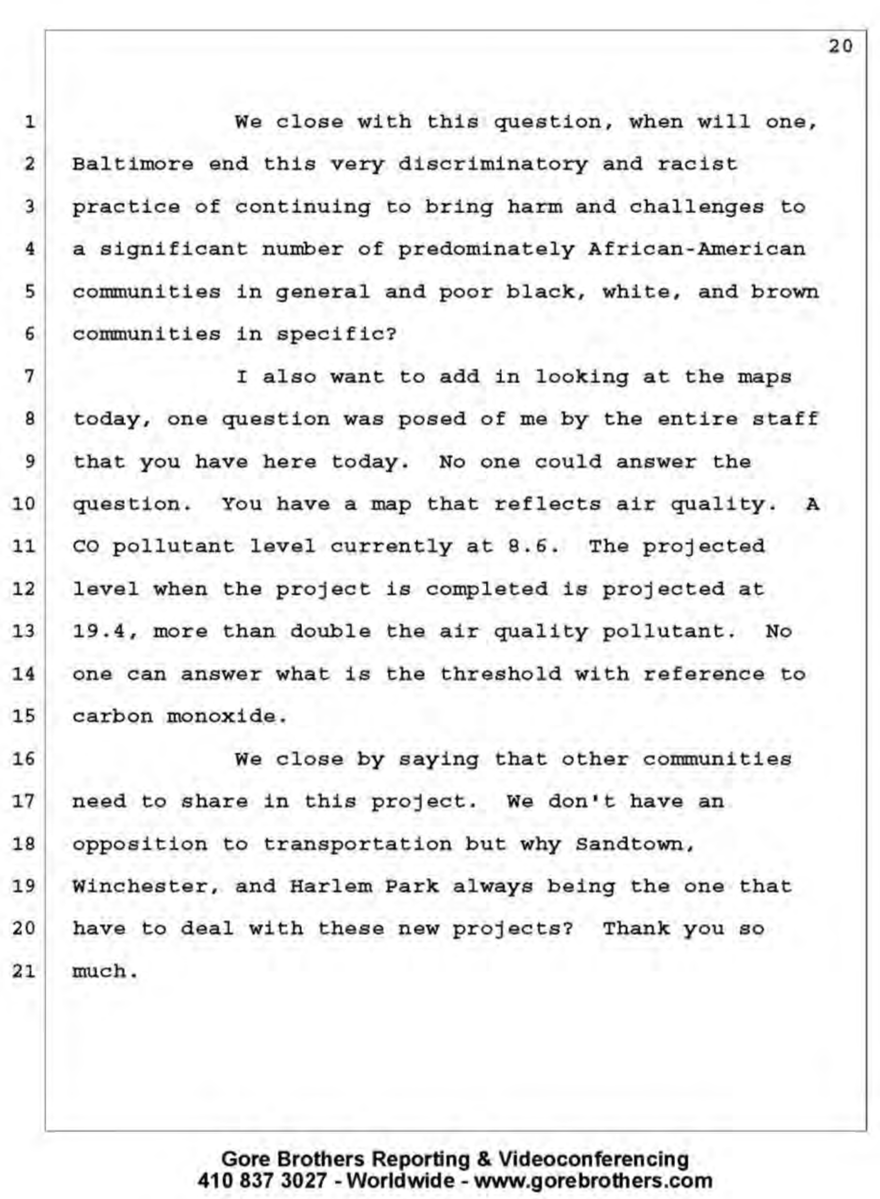
RESPONSES

Response to Comment 1:
Regarding the Baltimore City Health Disparities Report written by the Baltimore City Health Department and Johns Hopkins University, Children's Health was assessed for Air Quality, Water, Soil and Hazardous Material and is described in **Chapter VI** of this FEIS.

The Preferred Alternative would pose no health or safety risks that would disproportionately affect children. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA. No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water. Under the Preferred Alternative, 112 sites of concern were identified within 1 mile of the alignment; once type and extent of contamination and details of construction are known, potential risk and exposure can be assessed and appropriate documentation in place.

COMMENTS



2 We close with this question, when will one, Baltimore end this very discriminatory and racist practice of continuing to bring harm and challenges to a significant number of predominately African-American communities in general and poor black, white, and brown communities in specific?

3 I also want to add in looking at the maps today, one question was posed of me by the entire staff that you have here today. No one could answer the question. You have a map that reflects air quality. A CO pollutant level currently at 8.6. The projected level when the project is completed is projected at 19.4, more than double the air quality pollutant. No one can answer what is the threshold with reference to carbon monoxide.

We close by saying that other communities need to share in this project. We don't have an opposition to transportation but why Sandtown, Winchester, and Harlem Park always being the one that have to deal with these new projects? Thank you so much.

RESPONSES

Response to Comment 2:

Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of Transportation's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

The B&P Project Team has performed an Environmental Justice (EJ) analysis consistent with EO 12898 and subsequent USDOT Orders. A critical component of the Executive Order on environmental justice is public outreach. The Project Team has conducted extensive engagement with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held with local officials; public, local, and regional organizations; government agencies; and representatives of affected EJ communities along the evaluated alternative alignment. Three Public Open Houses, as well as ten community meetings, have been held where the public was given the opportunity to learn about the Project development in-person, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings. Additionally, the Project Team attended meetings at the request of the following organizations: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter's Clavier Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School.

Direct mailings to residents in the Study Area included property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The Project website continues to post meeting notices, Project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship, and other organizations.

The Project Team studied community composition in the areas affected by the build alternatives. It reviewed data from the American Community Survey 2009-2013 for minority and low-income populations, the National Center for Educational Statistics, government-assisted housing programs, historical references, city officials, field visits, and community meetings. From this information, the Project Team learned that of the 77 Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS.

COMMENTS

RESPONSES

Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations. For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings.

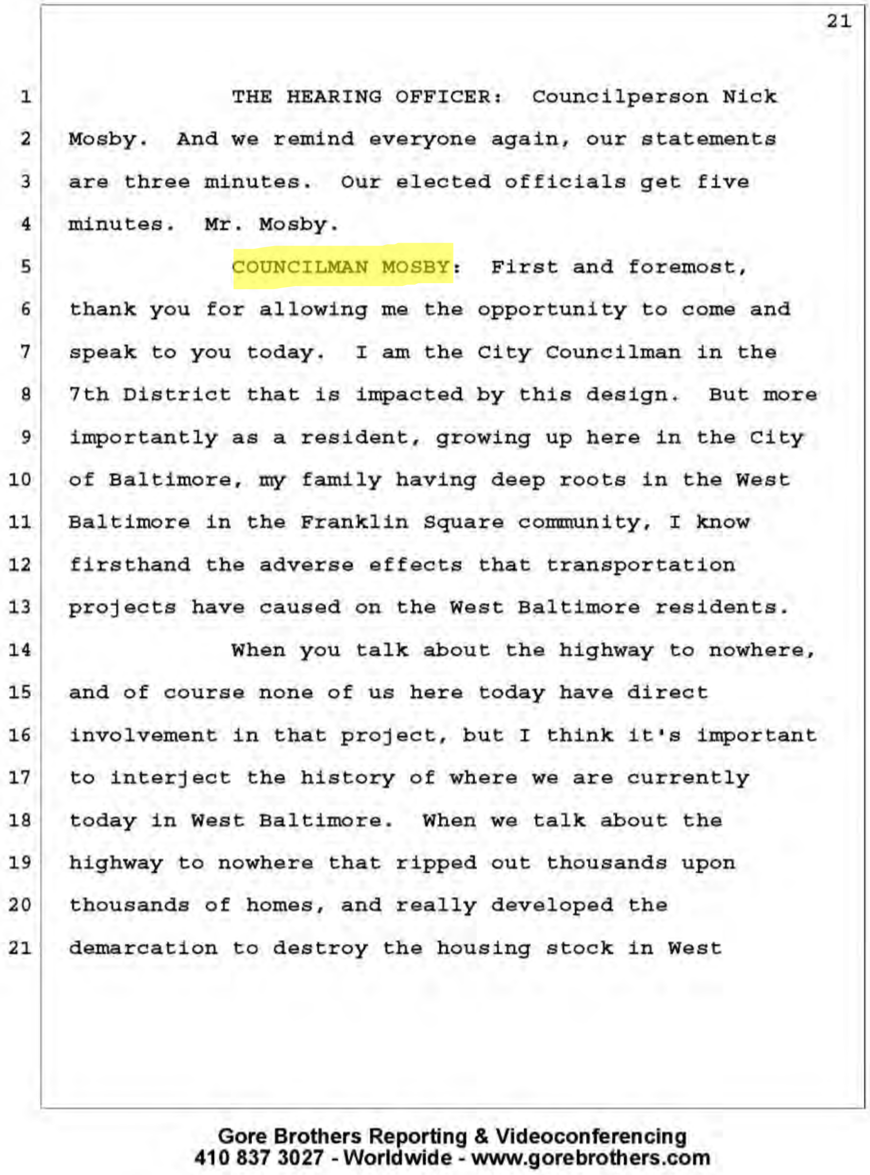
As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be underground which would reduce the overall impact to the communities. The Project sponsor will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project sponsor will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

Response to Comment 3:
Regarding the CO threshold, EPA sets *de minimis* thresholds for every 'criteria' pollutant. However, those thresholds are only applicable in areas that are in non-attainment or maintenance status for a particular pollutant. Baltimore City is in attainment for CO, so the threshold does not apply. As a result, the threshold for CO did not appear on the board at the meeting.

COMMENTS

RESPONSES

DEIS Comment 121:



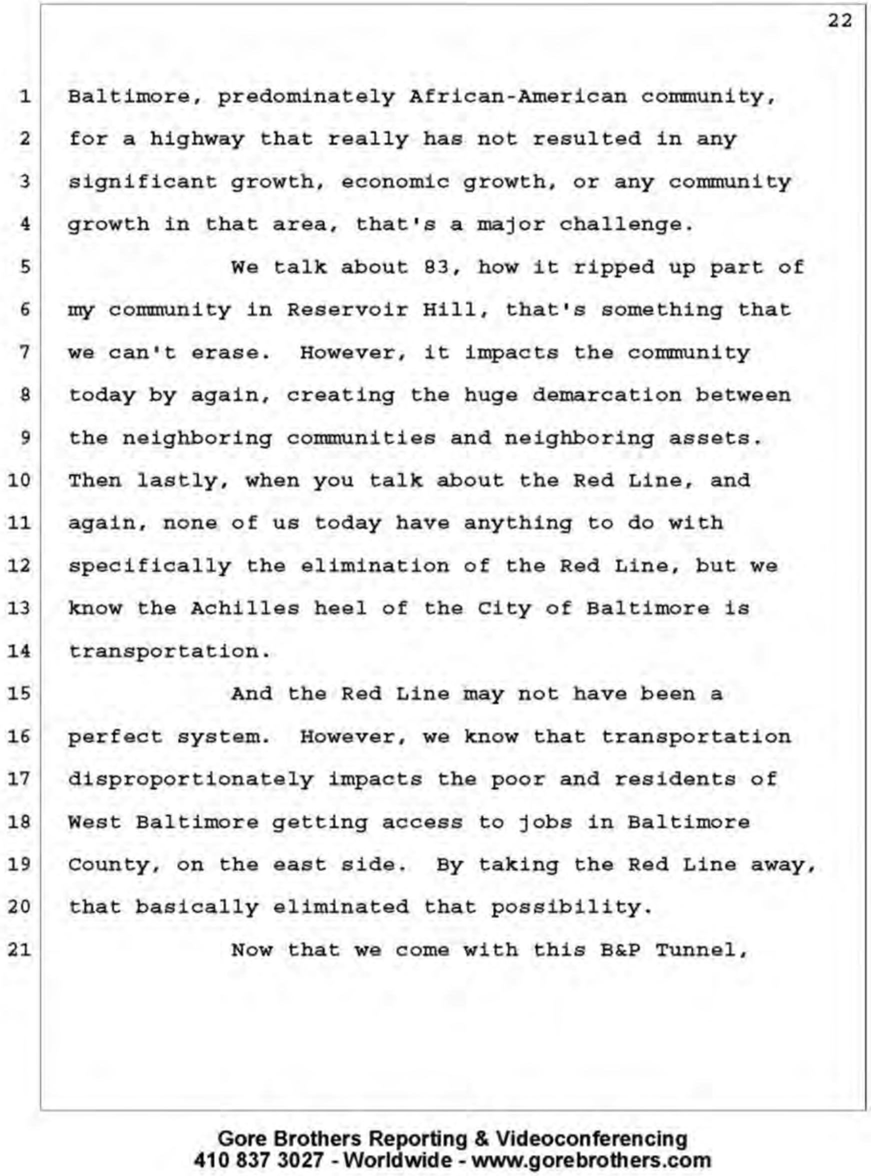
THE HEARING OFFICER: Councilperson Nick Mosby. And we remind everyone again, our statements are three minutes. Our elected officials get five minutes. Mr. Mosby.

COUNCILMAN MOSBY: First and foremost, thank you for allowing me the opportunity to come and speak to you today. I am the City Councilman in the 7th District that is impacted by this design. But more importantly as a resident, growing up here in the City of Baltimore, my family having deep roots in the West Baltimore in the Franklin Square community, I know firsthand the adverse effects that transportation projects have caused on the West Baltimore residents.

When you talk about the highway to nowhere, and of course none of us here today have direct involvement in that project, but I think it's important to interject the history of where we are currently today in West Baltimore. When we talk about the highway to nowhere that ripped out thousands upon thousands of homes, and really developed the demarcation to destroy the housing stock in West

COMMENTS

RESPONSES



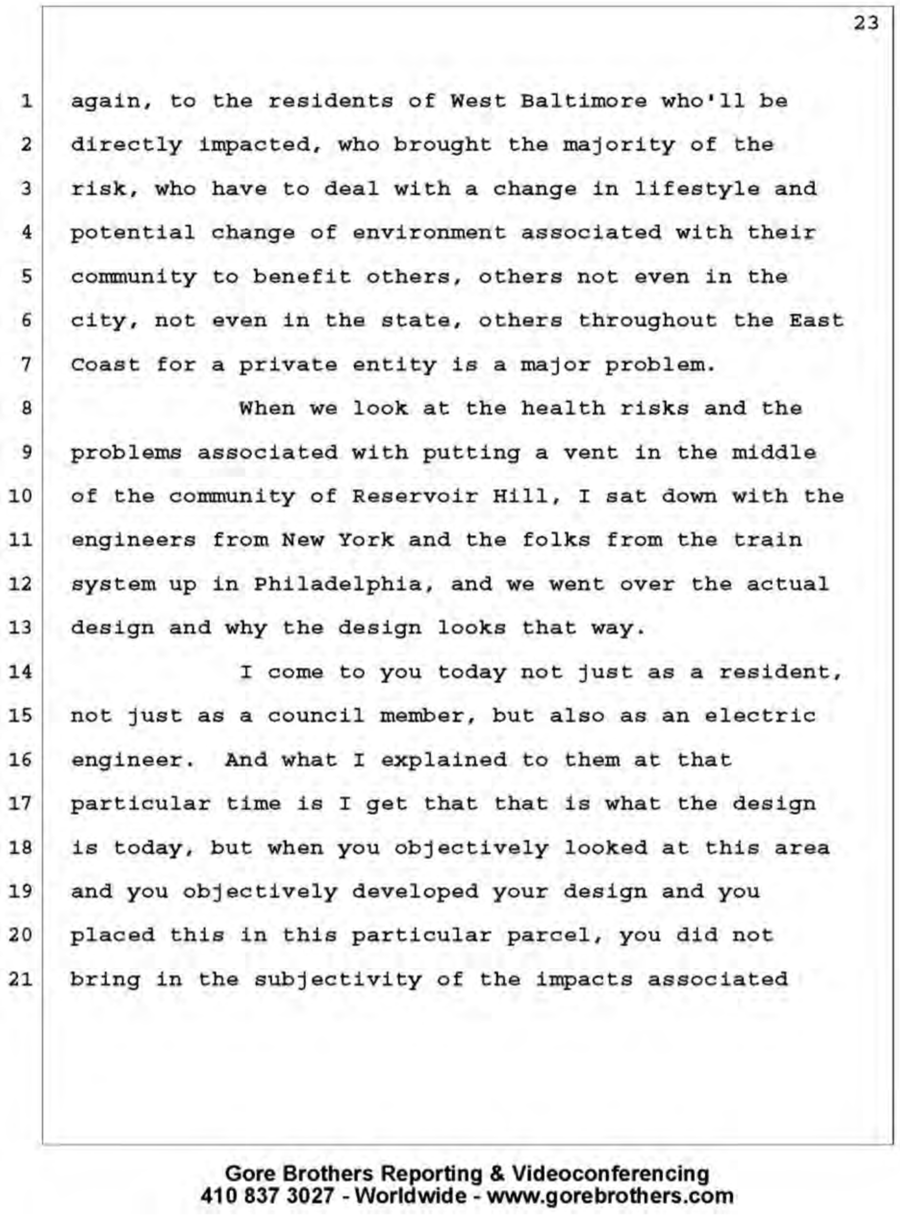
Baltimore, predominately African-American community, for a highway that really has not resulted in any significant growth, economic growth, or any community growth in that area, that's a major challenge.

We talk about 83, how it ripped up part of my community in Reservoir Hill, that's something that we can't erase. However, it impacts the community today by again, creating the huge demarcation between the neighboring communities and neighboring assets. Then lastly, when you talk about the Red Line, and again, none of us today have anything to do with specifically the elimination of the Red Line, but we know the Achilles heel of the City of Baltimore is transportation.

And the Red Line may not have been a perfect system. However, we know that transportation disproportionately impacts the poor and residents of West Baltimore getting access to jobs in Baltimore County, on the east side. By taking the Red Line away, that basically eliminated that possibility.

Now that we come with this B&P Tunnel,

COMMENTS



again, to the residents of West Baltimore who'll be
directly impacted, who brought the majority of the
risk, who have to deal with a change in lifestyle and
1 potential change of environment associated with their
community to benefit others, others not even in the
city, not even in the state, others throughout the East
Coast for a private entity is a major problem.

When we look at the health risks and the
problems associated with putting a vent in the middle
of the community of Reservoir Hill, I sat down with the
engineers from New York and the folks from the train
system up in Philadelphia, and we went over the actual
2 design and why the design looks that way.

I come to you today not just as a resident,
not just as a council member, but also as an electric
engineer. And what I explained to them at that
particular time is I get that that is what the design
is today, but when you objectively looked at this area
and you objectively developed your design and you
placed this in this particular parcel, you did not
bring in the subjectivity of the impacts associated

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RESPONSES

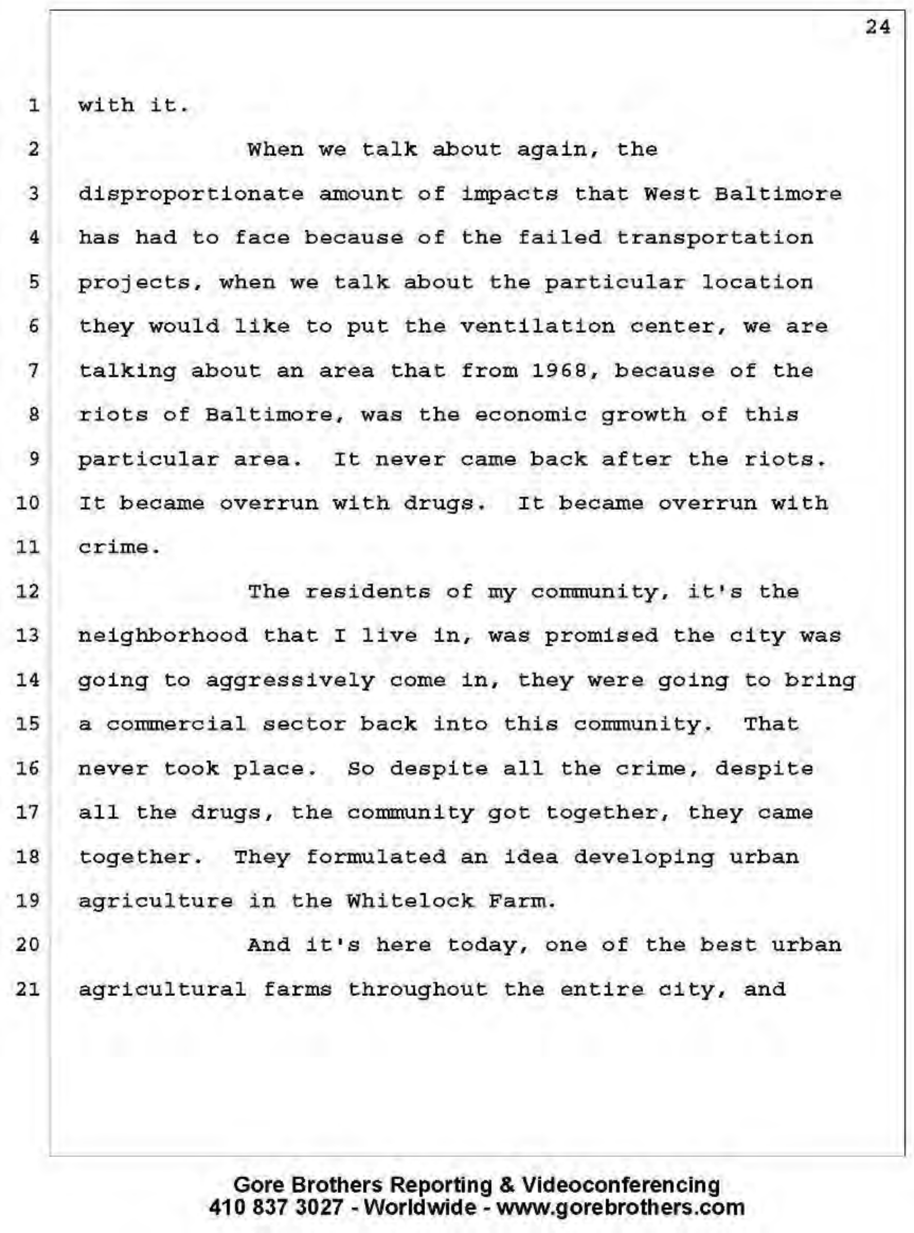
Response to Comment 1:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

Response to Comment 2:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS



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with it.

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When we talk about again, the disproportionate amount of impacts that West Baltimore has had to face because of the failed transportation projects, when we talk about the particular location they would like to put the ventilation center, we are talking about an area that from 1968, because of the riots of Baltimore, was the economic growth of this particular area. It never came back after the riots. It became overrun with drugs. It became overrun with crime.

The residents of my community, it's the neighborhood that I live in, was promised the city was going to aggressively come in, they were going to bring a commercial sector back into this community. That never took place. So despite all the crime, despite all the drugs, the community got together, they came together. They formulated an idea developing urban agriculture in the Whitelock Farm.

And it's here today, one of the best urban agricultural farms throughout the entire city, and

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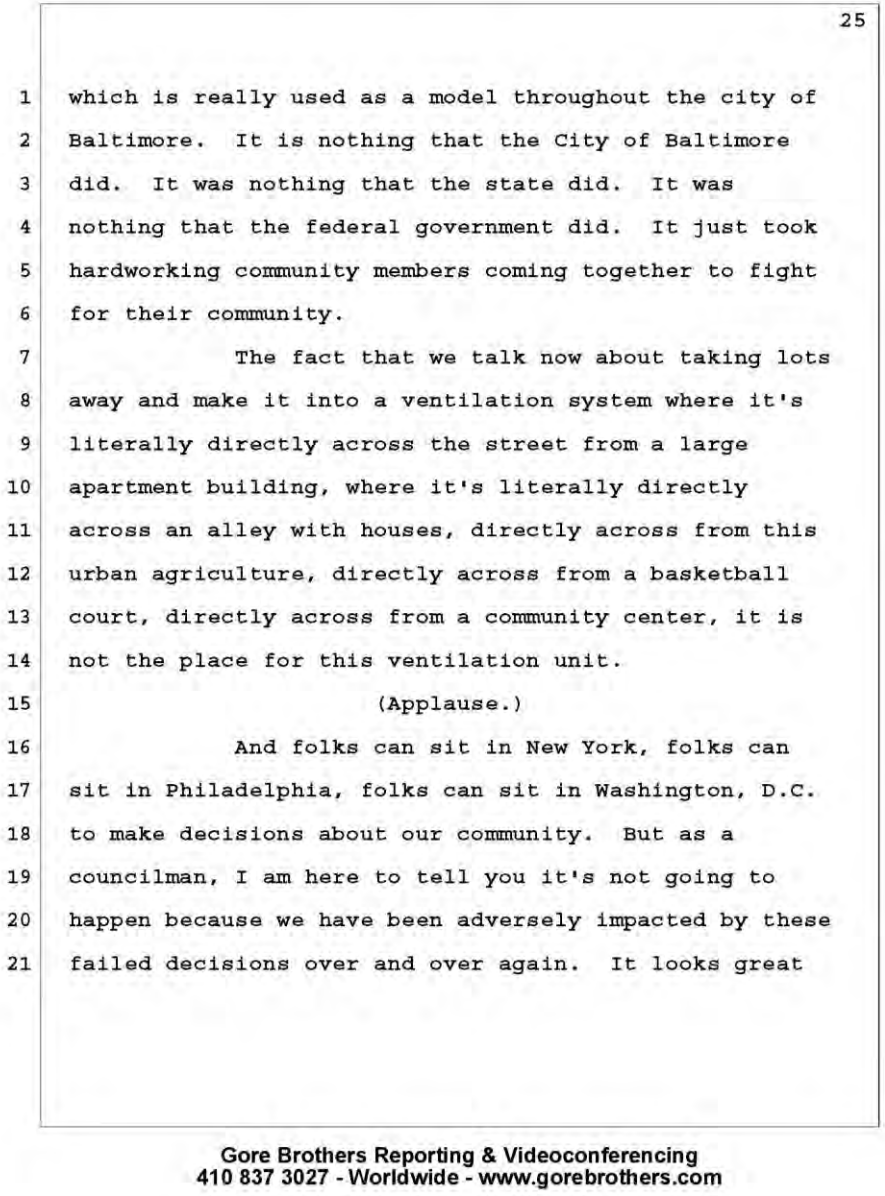
RESPONSES

Response to Comment 3:
The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

COMMENTS

RESPONSES



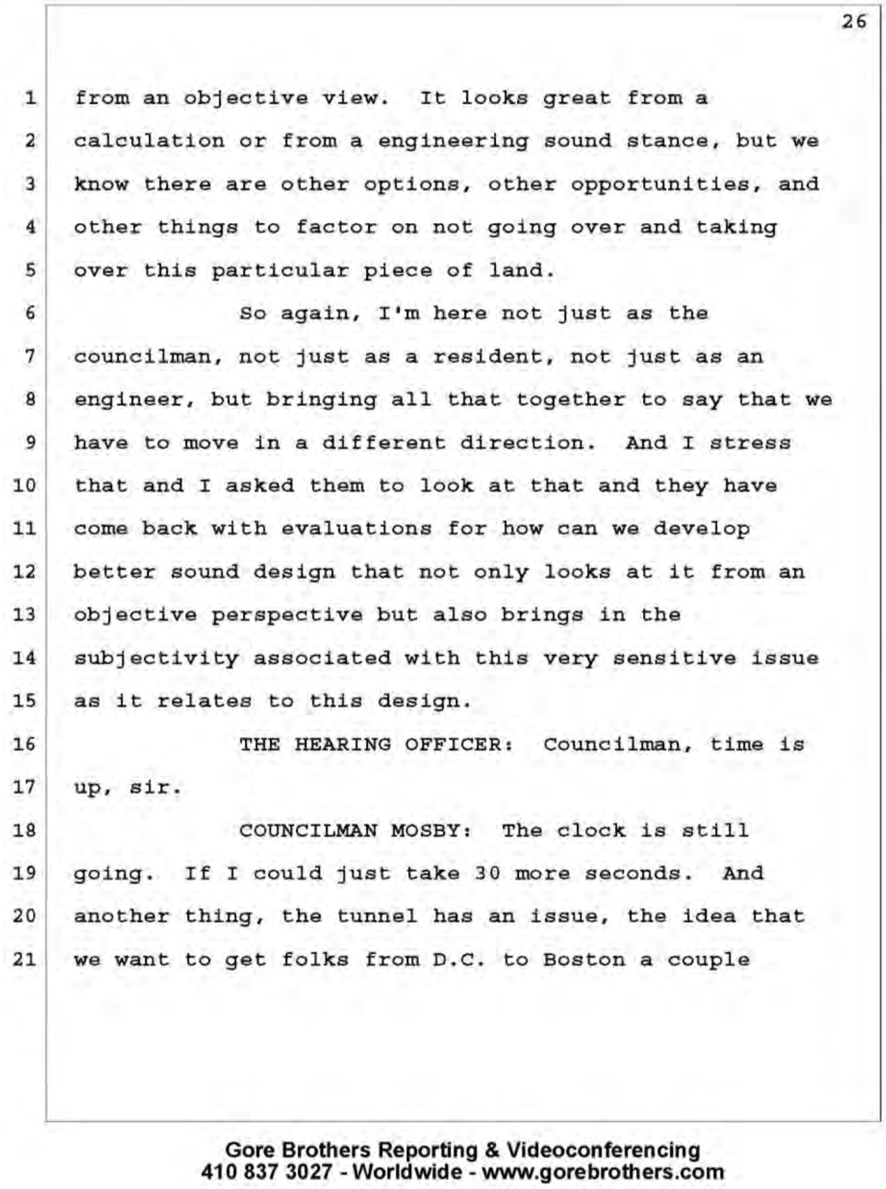
which is really used as a model throughout the city of Baltimore. It is nothing that the City of Baltimore did. It was nothing that the state did. It was nothing that the federal government did. It just took hardworking community members coming together to fight for their community.

The fact that we talk now about taking lots away and make it into a ventilation system where it's literally directly across the street from a large apartment building, where it's literally directly across an alley with houses, directly across from this urban agriculture, directly across from a basketball court, directly across from a community center, it is not the place for this ventilation unit.

(Applause.)

And folks can sit in New York, folks can sit in Philadelphia, folks can sit in Washington, D.C. to make decisions about our community. But as a councilman, I am here to tell you it's not going to happen because we have been adversely impacted by these failed decisions over and over again. It looks great

COMMENTS



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from an objective view. It looks great from a calculation or from a engineering sound stance, but we know there are other options, other opportunities, and other things to factor on not going over and taking over this particular piece of land.

4

So again, I'm here not just as the councilman, not just as a resident, not just as an engineer, but bringing all that together to say that we have to move in a different direction. And I stress that and I asked them to look at that and they have come back with evaluations for how can we develop better sound design that not only looks at it from an objective perspective but also brings in the subjectivity associated with this very sensitive issue as it relates to this design.

THE HEARING OFFICER: Councilman, time is up, sir.

COUNCILMAN MOSBY: The clock is still going. If I could just take 30 more seconds. And another thing, the tunnel has an issue, the idea that we want to get folks from D.C. to Boston a couple

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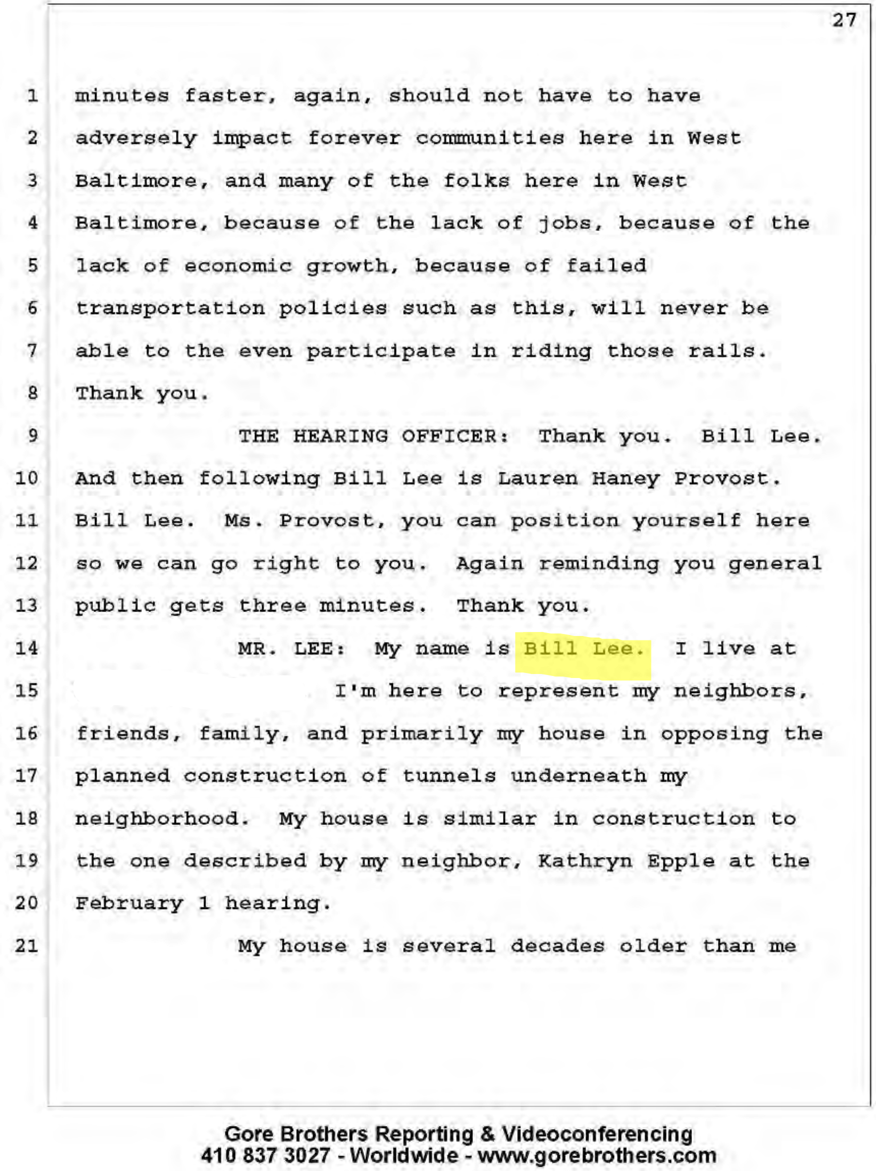
RESPONSES

Response to Comment 4:
Since publication of the DEIS, Alternative 3B was advanced through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

RESPONSES

DEIS Comment 122:



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minutes faster, again, should not have to have adversely impact forever communities here in West Baltimore, and many of the folks here in West Baltimore, because of the lack of jobs, because of the lack of economic growth, because of failed transportation policies such as this, will never be able to the even participate in riding those rails. Thank you.

THE HEARING OFFICER: Thank you. Bill Lee. And then following Bill Lee is Lauren Haney Provost. Bill Lee. Ms. Provost, you can position yourself here so we can go right to you. Again reminding you general public gets three minutes. Thank you.

MR. LEE: My name is Bill Lee. I live at I'm here to represent my neighbors, friends, family, and primarily my house in opposing the planned construction of tunnels underneath my neighborhood. My house is similar in construction to the one described by my neighbor, Kathryn Epple at the February 1 hearing.

My house is several decades older than me

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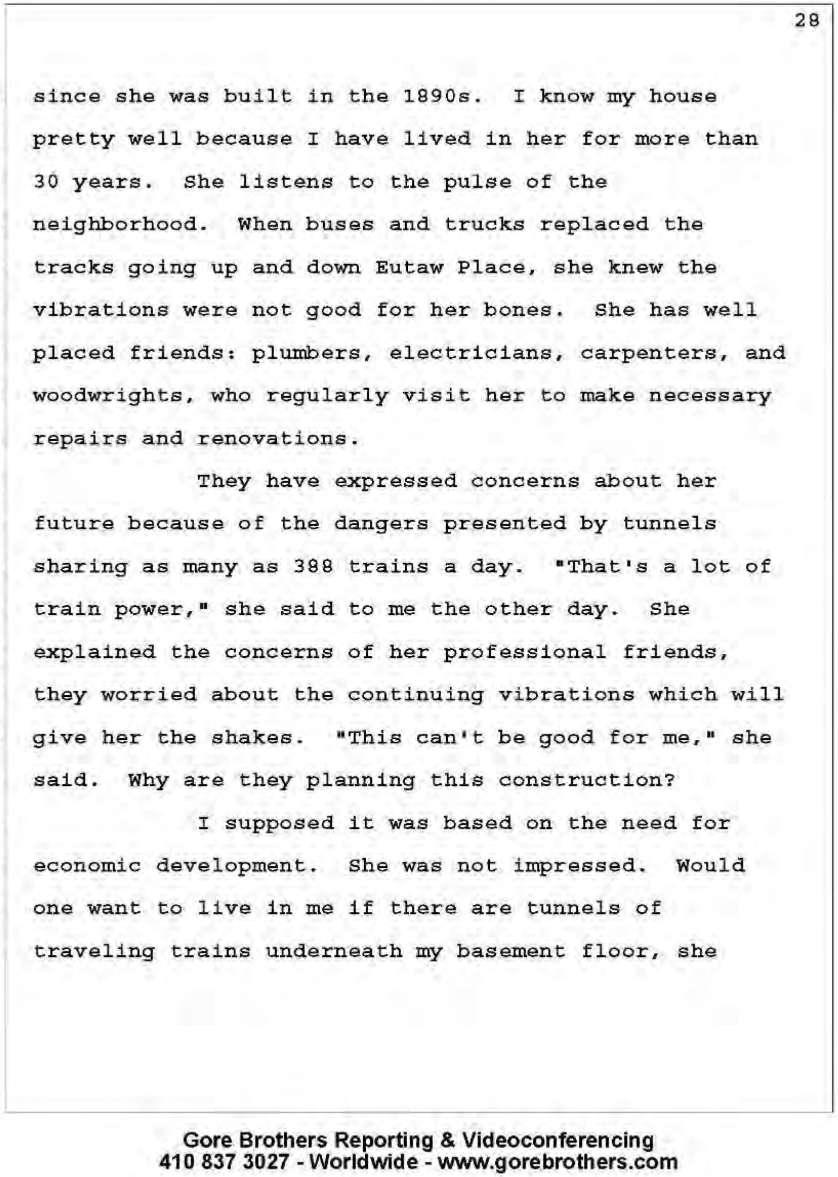
COMMENTS



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since she was built in the 1890s. I know my house pretty well because I have lived in her for more than 30 years. She listens to the pulse of the neighborhood. When buses and trucks replaced the tracks going up and down Eutaw Place, she knew the vibrations were not good for her bones. She has well placed friends: plumbers, electricians, carpenters, and woodwrights, who regularly visit her to make necessary repairs and renovations.

They have expressed concerns about her future because of the dangers presented by tunnels sharing as many as 388 trains a day. "That's a lot of
1 train power," she said to me the other day. She
explained the concerns of her professional friends,
they worried about the continuing vibrations which will
give her the shakes. "This can't be good for me," she
2 said. Why are they planning this construction?

I supposed it was based on the need for economic development. She was not impressed. Would
3 one want to live in me if there are tunnels of
traveling trains underneath my basement floor, she

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RESPONSES

Response to Comment 1:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be compensated for the cost of repairs.

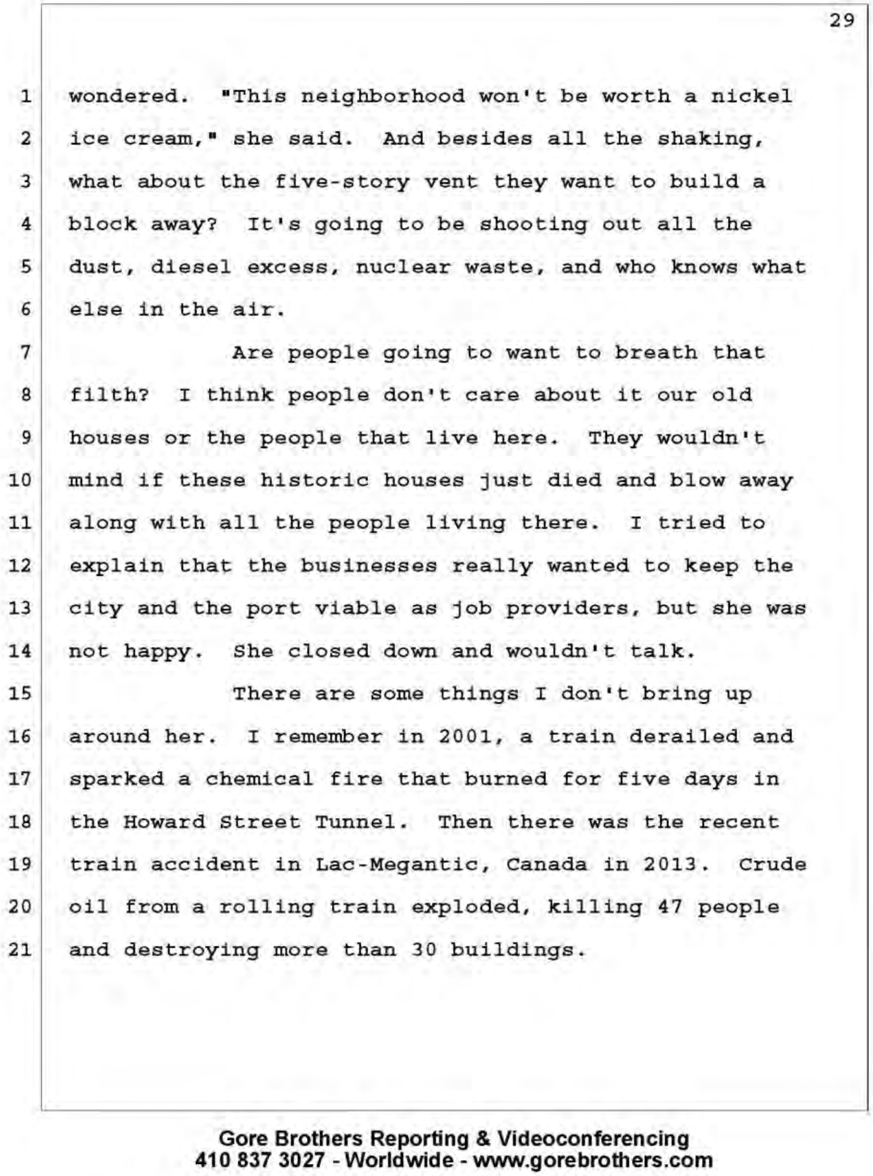
Response to Comment 2:
The Purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC, including:

- To reduce travel time through the B&P Tunnel and along the NEC,
- To accommodate existing and projected travel demand for intercity and commuter passenger services,
- To eliminate impediments to existing and projected operations along the NEC, and
- To provide operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

Response to Comment 3:
The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS



wondered. "This neighborhood won't be worth a nickel
ice cream," she said. And besides all the shaking,
what about the five-story vent they want to build a
4 block away? It's going to be shooting out all the
dust, diesel excess, nuclear waste, and who knows what
else in the air.

Are people going to want to breath that
filth? I think people don't care about it our old
houses or the people that live here. They wouldn't
5 mind if these historic houses just died and blow away
along with all the people living there. I tried to
explain that the businesses really wanted to keep the
city and the port viable as job providers, but she was
not happy. She closed down and wouldn't talk.

There are some things I don't bring up
around her. I remember in 2001, a train derailed and
sparked a chemical fire that burned for five days in
6 the Howard Street Tunnel. Then there was the recent
train accident in Lac-Megantic, Canada in 2013. Crude
oil from a rolling train exploded, killing 47 people
and destroying more than 30 buildings.

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RESPONSES

Response to Comment 4:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

Response to Comment 5:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

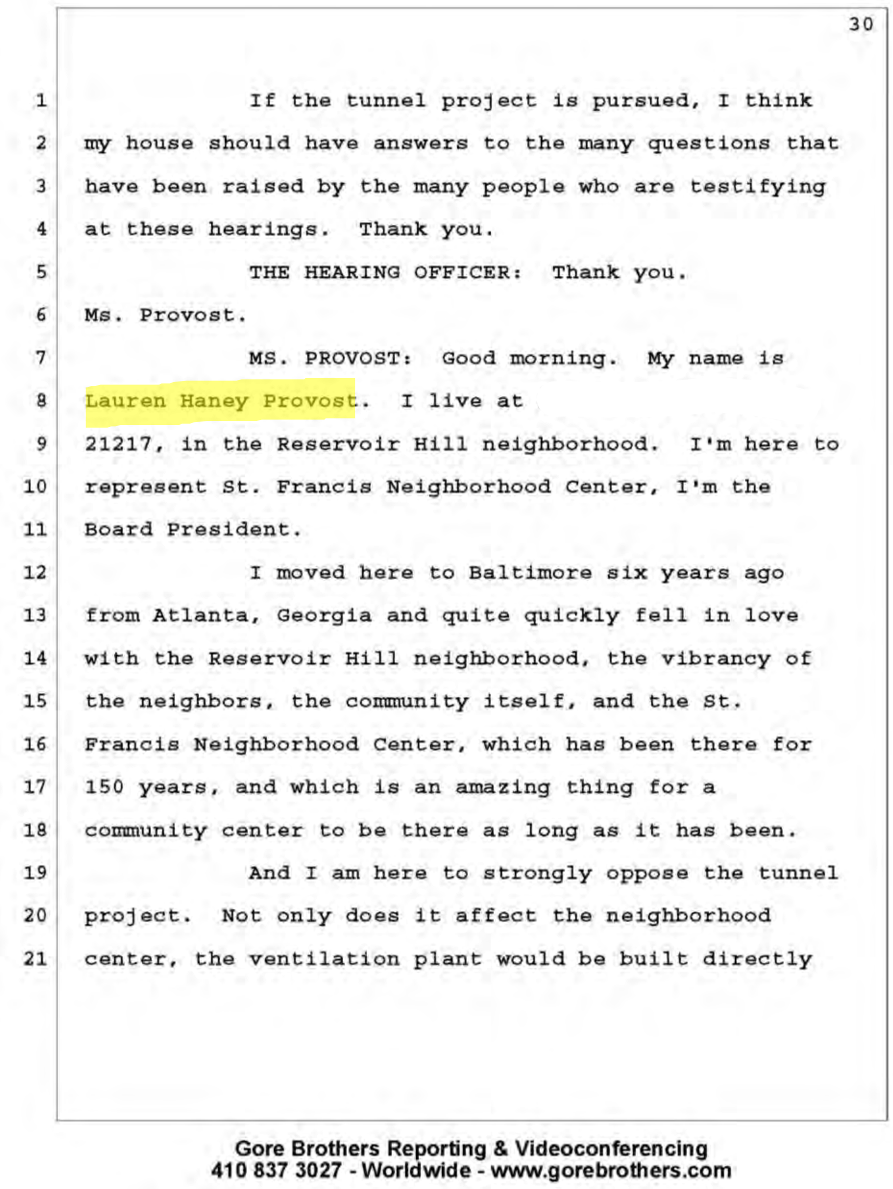
The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**.

COMMENTS	RESPONSES
	Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Response to Comment 6:** The Project has been planned mostly underground in order to avoid greater impacts to the community. Fire in a tunnel is much less damaging to a community than a fire or other emergency event on an above-ground track running through the neighborhood. The new B&P Tunnel will be designed to be better equipped and prepared than the current B&P Tunnel.

COMMENTS

RESPONSES

DEIS Comment 123:



If the tunnel project is pursued, I think my house should have answers to the many questions that have been raised by the many people who are testifying at these hearings. Thank you.

THE HEARING OFFICER: Thank you. Ms. Provost.

MS. PROVOST: Good morning. My name is Lauren Haney Provost. I live at 21217, in the Reservoir Hill neighborhood. I'm here to represent St. Francis Neighborhood Center, I'm the Board President.

I moved here to Baltimore six years ago from Atlanta, Georgia and quite quickly fell in love with the Reservoir Hill neighborhood, the vibrancy of the neighbors, the community itself, and the St. Francis Neighborhood Center, which has been there for 150 years, and which is an amazing thing for a community center to be there as long as it has been.

And I am here to strongly oppose the tunnel project. Not only does it affect the neighborhood center, the ventilation plant would be built directly

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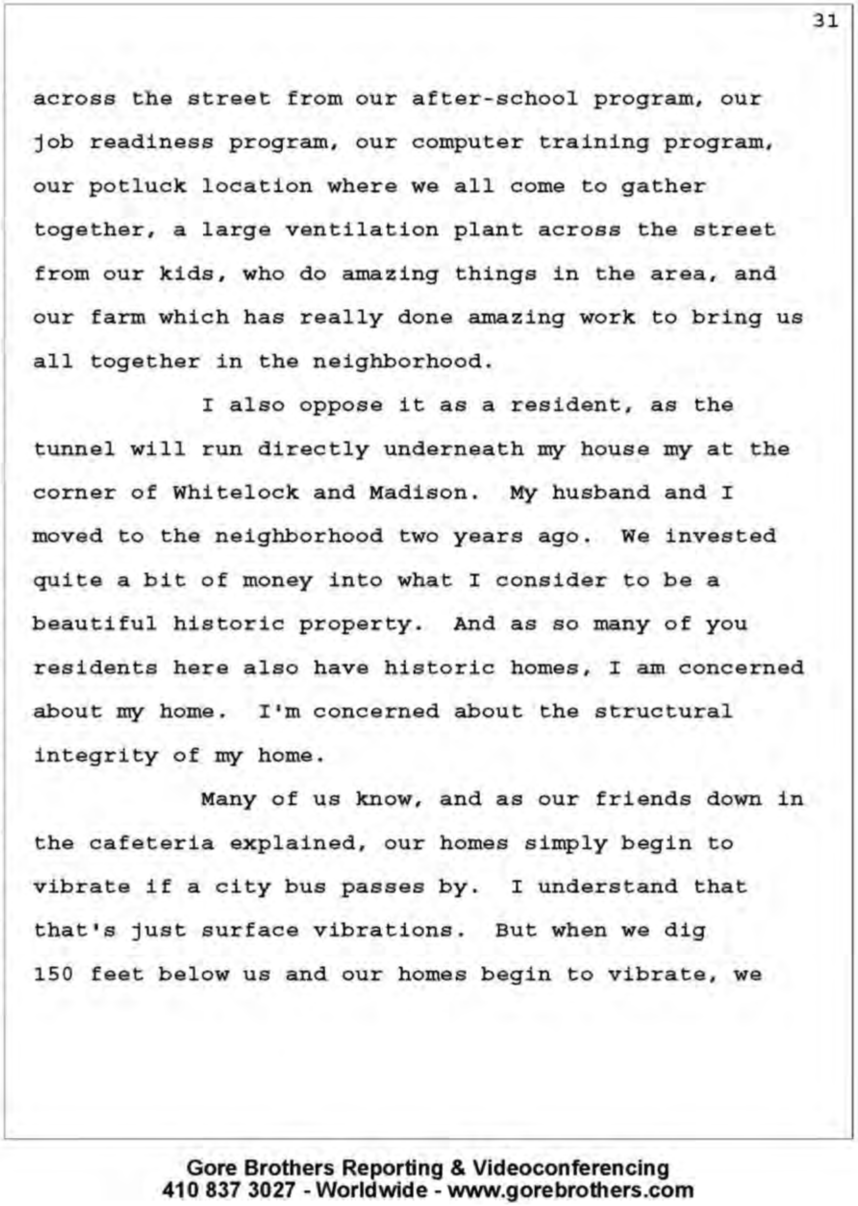

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1 across the street from our after-school program, our job readiness program, our computer training program, our potluck location where we all come to gather together, a large ventilation plant across the street from our kids, who do amazing things in the area, and our farm which has really done amazing work to bring us all together in the neighborhood.

I also oppose it as a resident, as the tunnel will run directly underneath my house my at the corner of Whitelock and Madison. My husband and I 2 moved to the neighborhood two years ago. We invested quite a bit of money into what I consider to be a beautiful historic property. And as so many of you residents here also have historic homes, I am concerned about my home. I'm concerned about the structural integrity of my home.

Many of us know, and as our friends down in 3 the cafeteria explained, our homes simply begin to vibrate if a city bus passes by. I understand that that's just surface vibrations. But when we dig 150 feet below us and our homes begin to vibrate, we

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RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 2:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

Response to Comment 3:
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty

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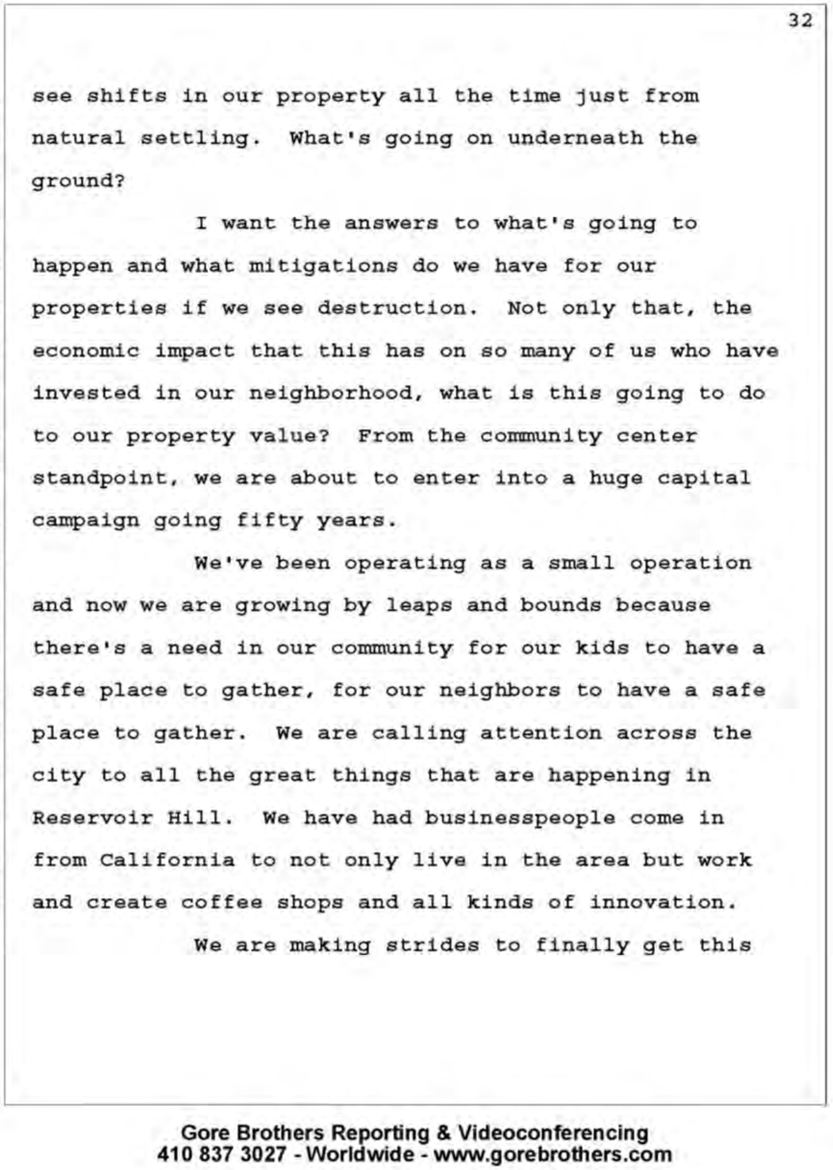

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see shifts in our property all the time just from
3 natural settling. What's going on underneath the
ground?

I want the answers to what's going to
happen and what mitigations do we have for our
properties if we see destruction. Not only that, the
4 economic impact that this has on so many of us who have
invested in our neighborhood, what is this going to do
to our property value? From the community center
standpoint, we are about to enter into a huge capital
campaign going fifty years.

We've been operating as a small operation and now we are growing by leaps and bounds because there's a need in our community for our kids to have a safe place to gather, for our neighbors to have a safe place to gather. We are calling attention across the city to all the great things that are happening in Reservoir Hill. We have had businesspeople come in from California to not only live in the area but work and create coffee shops and all kinds of innovation.

We are making strides to finally get this

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RESPONSES

impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

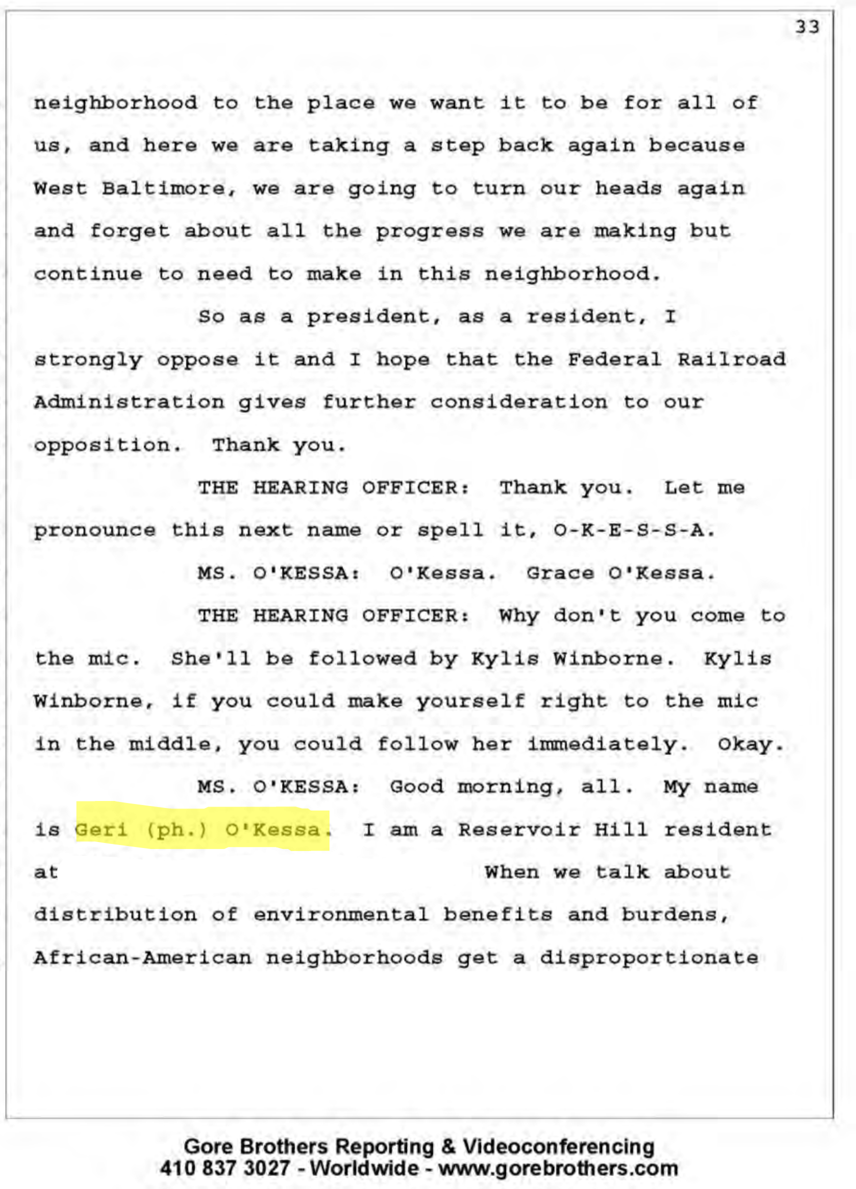
Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

Response to Comment 4:
The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS

DEIS Comment 124:



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neighborhood to the place we want it to be for all of us, and here we are taking a step back again because West Baltimore, we are going to turn our heads again and forget about all the progress we are making but continue to need to make in this neighborhood.

So as a president, as a resident, I strongly oppose it and I hope that the Federal Railroad Administration gives further consideration to our opposition. Thank you.

THE HEARING OFFICER: Thank you. Let me pronounce this next name or spell it, O-K-E-S-S-A.

MS. O'KESSA: O'Kessa. Grace O'Kessa.

THE HEARING OFFICER: Why don't you come to the mic. She'll be followed by Kylis Winborne. Kylis Winborne, if you could make yourself right to the mic in the middle, you could follow her immediately. Okay.

MS. O'KESSA: Good morning, all. My name is Geri (ph.) O'Kessa. I am a Reservoir Hill resident at When we talk about

1 distribution of environmental benefits and burdens, African-American neighborhoods get a disproportionate

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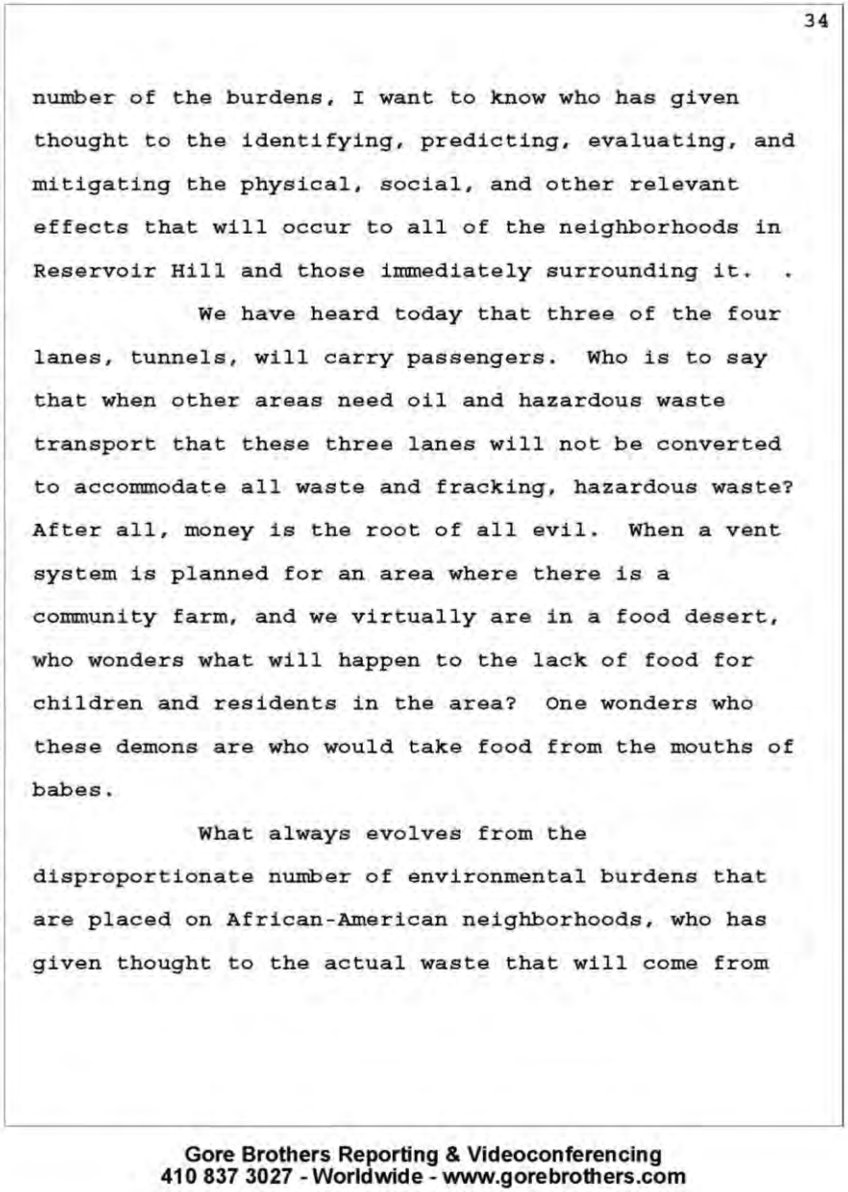
RESPONSES

Response to Comment 1:
The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**.

The Project Team has engaged in extensive public outreach throughout the development of the project, including holding three public open houses and ten community meetings where the public was given the opportunity to learn about the project and engage in discussion with the Project Team. In addition to these meetings, the Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS. Additional details of this outreach are described in **Chapter VI** as well as **Chapter VIII.**

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS



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1 number of the burdens, I want to know who has given thought to the identifying, predicting, evaluating, and mitigating the physical, social, and other relevant effects that will occur to all of the neighborhoods in Reservoir Hill and those immediately surrounding it. .

2 We have heard today that three of the four lanes, tunnels, will carry passengers. Who is to say that when other areas need oil and hazardous waste transport that these three lanes will not be converted to accommodate all waste and fracking, hazardous waste? 3 After all, money is the root of all evil. When a vent system is planned for an area where there is a community farm, and we virtually are in a food desert, who wonders what will happen to the lack of food for children and residents in the area? One wonders who these demons are who would take food from the mouths of babes.

What always evolves from the 4 disproportionate number of environmental burdens that are placed on African-American neighborhoods, who has given thought to the actual waste that will come from

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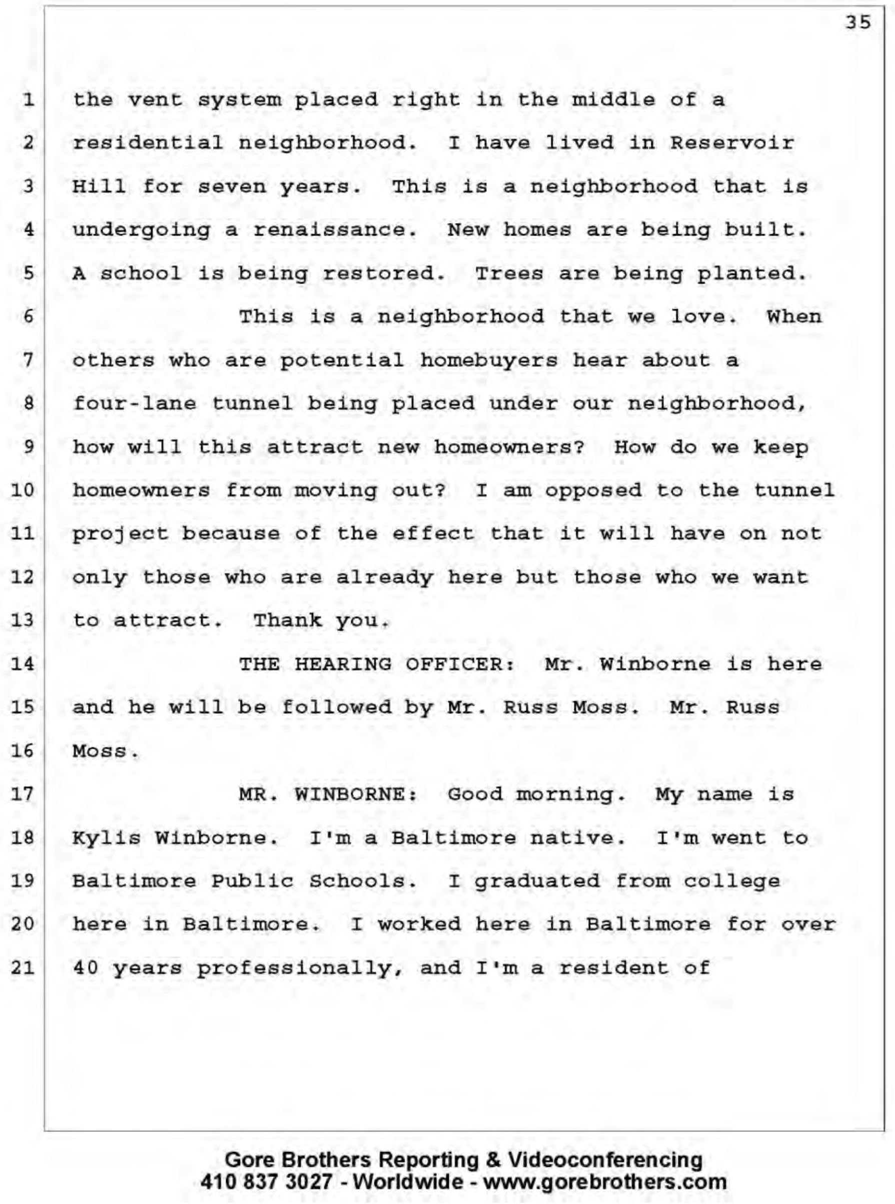
RESPONSES

Response to Comment 2:
Per **Chapter V** of the FEIS, it is projected that in 2040, 388 trains are expected to use the tunnel—386 passenger trains with no hazardous material cargo, and two freight trains with the potential to have limited hazardous material cargo (based on current freight volumes projected into the future). Since Amtrak is responsible for operating a robust passenger rail service, the two inner tracks of the four-track tunnel system would be reserved (in all but emergency conditions) for high-speed passenger train operations and freight services would be restricted to share the two slower, outer tracks. It is not possible for the tunnel system to accommodate significantly increased freight operations.

Response to Comment 3:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 4:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

COMMENTS



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the vent system placed right in the middle of a residential neighborhood. I have lived in Reservoir Hill for seven years. This is a neighborhood that is undergoing a renaissance. New homes are being built. A school is being restored. Trees are being planted.

5 This is a neighborhood that we love. When others who are potential homebuyers hear about a four-lane tunnel being placed under our neighborhood, how will this attract new homeowners? How do we keep homeowners from moving out? I am opposed to the tunnel project because of the effect that it will have on not only those who are already here but those who we want to attract. Thank you.

THE HEARING OFFICER: Mr. Winborne is here and he will be followed by Mr. Russ Moss. Mr. Russ Moss.

MR. WINBORNE: Good morning. My name is Kylis Winborne. I'm a Baltimore native. I'm went to Baltimore Public Schools. I graduated from college here in Baltimore. I worked here in Baltimore for over 40 years professionally, and I'm a resident of

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RESPONSES

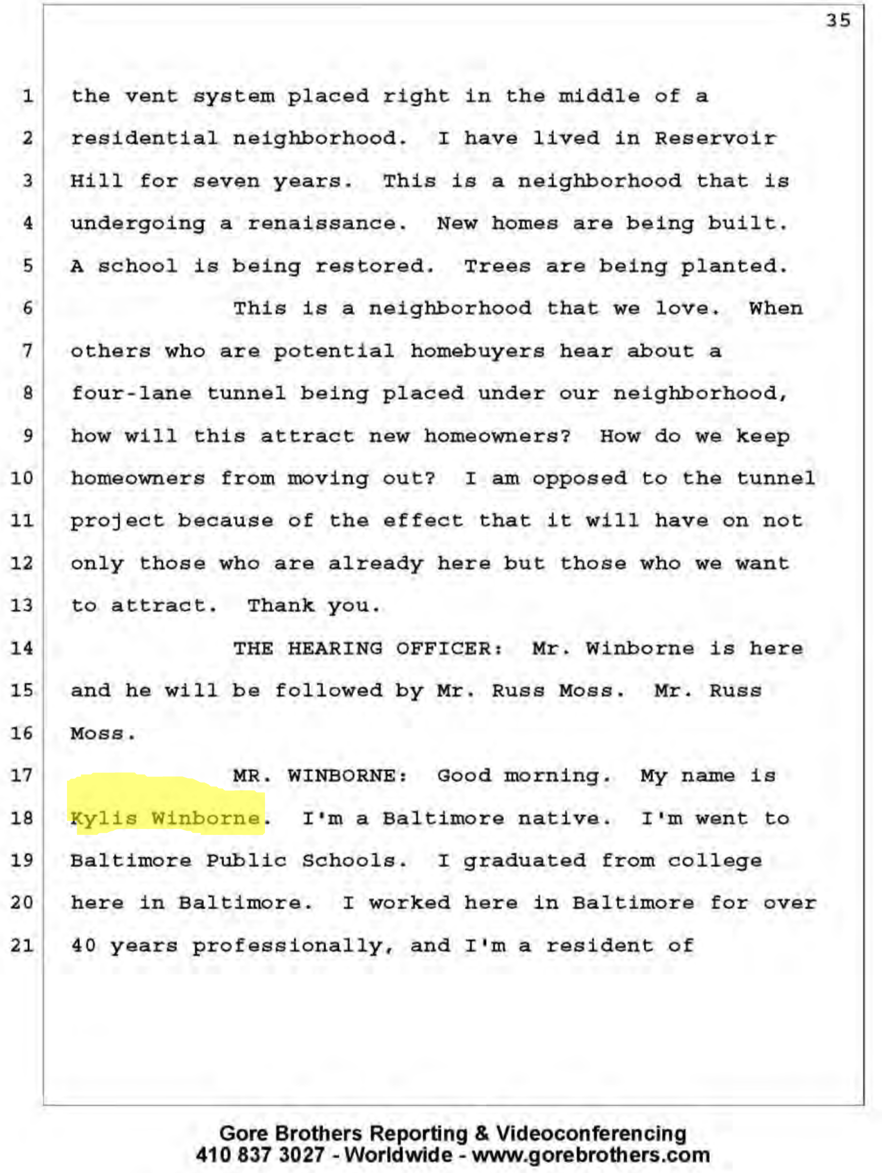
Response to Comment 5:
The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

RESPONSES

DEIS Comment 125:



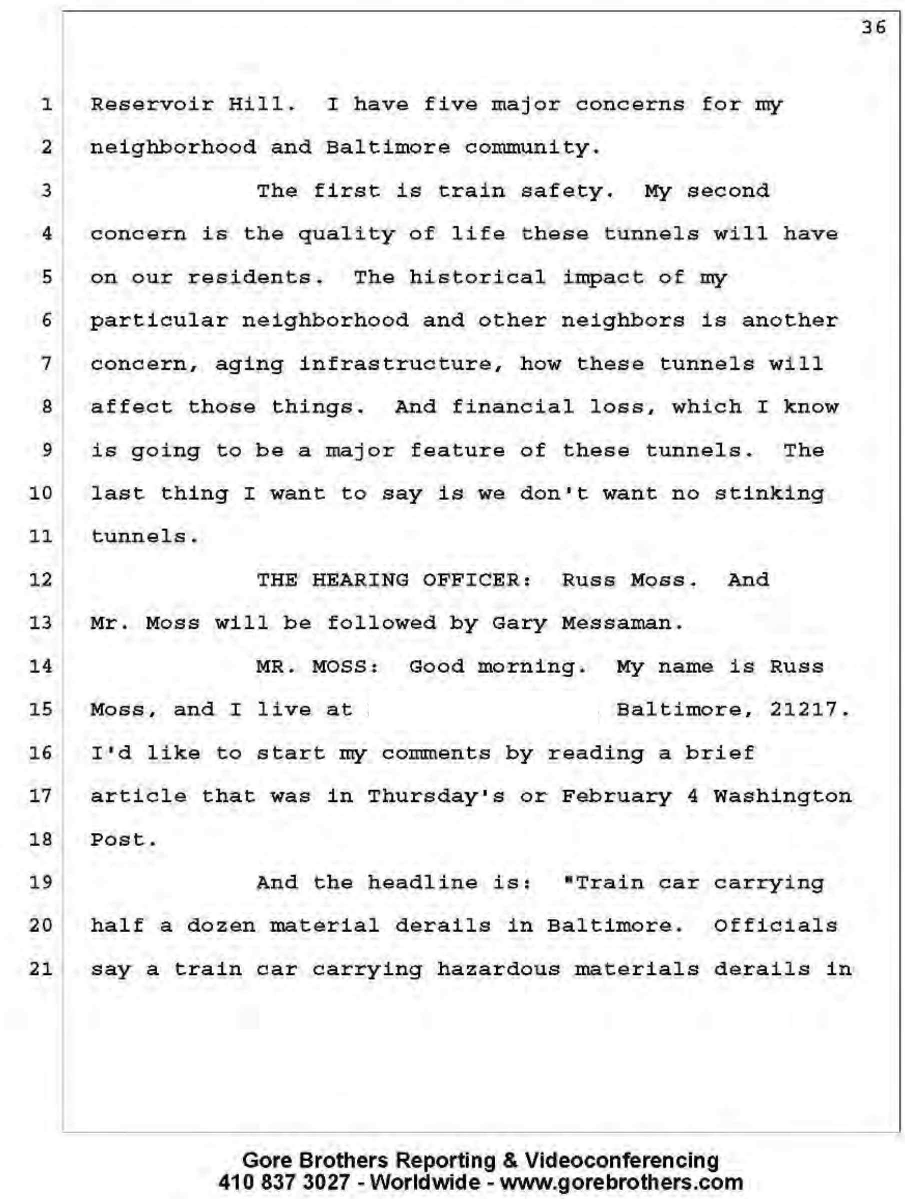
the vent system placed right in the middle of a residential neighborhood. I have lived in Reservoir Hill for seven years. This is a neighborhood that is undergoing a renaissance. New homes are being built. A school is being restored. Trees are being planted.

This is a neighborhood that we love. When others who are potential homebuyers hear about a four-lane tunnel being placed under our neighborhood, how will this attract new homeowners? How do we keep homeowners from moving out? I am opposed to the tunnel project because of the effect that it will have on not only those who are already here but those who we want to attract. Thank you.

THE HEARING OFFICER: Mr. Winborne is here and he will be followed by Mr. Russ Moss. Mr. Russ Moss.

MR. WINBORNE: Good morning. My name is Kylis Winborne. I'm a Baltimore native. I'm went to Baltimore Public Schools. I graduated from college here in Baltimore. I worked here in Baltimore for over 40 years professionally, and I'm a resident of

COMMENTS



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Reservoir Hill. I have five major concerns for my
neighborhood and Baltimore community.

1 The first is train safety. My second
2 concern is the quality of life these tunnels will have
on our residents. The historical impact of my
particular neighborhood and other neighbors is another
concern, aging infrastructure, how these tunnels will
3 affect those things. And financial loss, which I know
is going to be a major feature of these tunnels. The
last thing I want to say is we don't want no stinking
tunnels.

THE HEARING OFFICER: Russ Moss. And
Mr. Moss will be followed by Gary Messaman.

MR. MOSS: Good morning. My name is Russ
Moss, and I live at [redacted] Baltimore, 21217.
I'd like to start my comments by reading a brief
article that was in Thursday's or February 4 Washington
Post.

And the headline is: "Train car carrying
half a dozen material derails in Baltimore. Officials
say a train car carrying hazardous materials derails in

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RESPONSES

Response to Comment 1:
Trains are among the safest form of transportation available on an accident per passenger-mile basis. In the unlikely event of an accident, local responders receive training for a variety of incidents related to specific facilities, including the B&P Tunnel. The tunnel would be constructed to meet current standards for fire protection. Additionally, the Project sponsor will develop and implement a Hazardous Spill Prevention Plan and a Hazardous Materials Remediation Plan, as well as an Emergency Management Plan to be implemented in the event of a tunnel emergency.

Response to Comment 2:
Regarding quality of life, potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

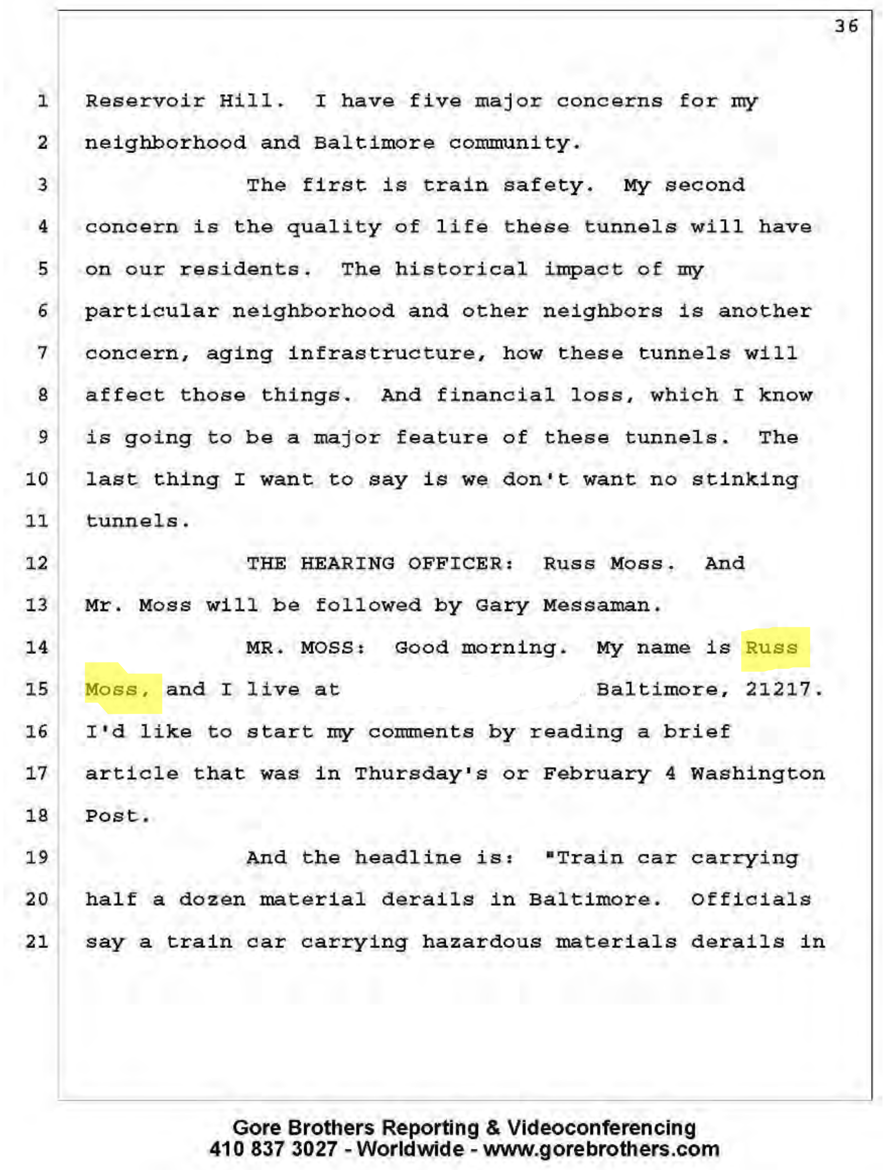
For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII.**

Regarding historical impact, the build alternatives would impact the Midtown-Edmondson Historic District. Construction would require demolition of nine historic properties located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The current preferred location for the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI** and **Chapter VII**.

Response to Comment 3:
The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS | **RESPONSES**

DEIS Comment 126:



Reservoir Hill. I have five major concerns for my neighborhood and Baltimore community.

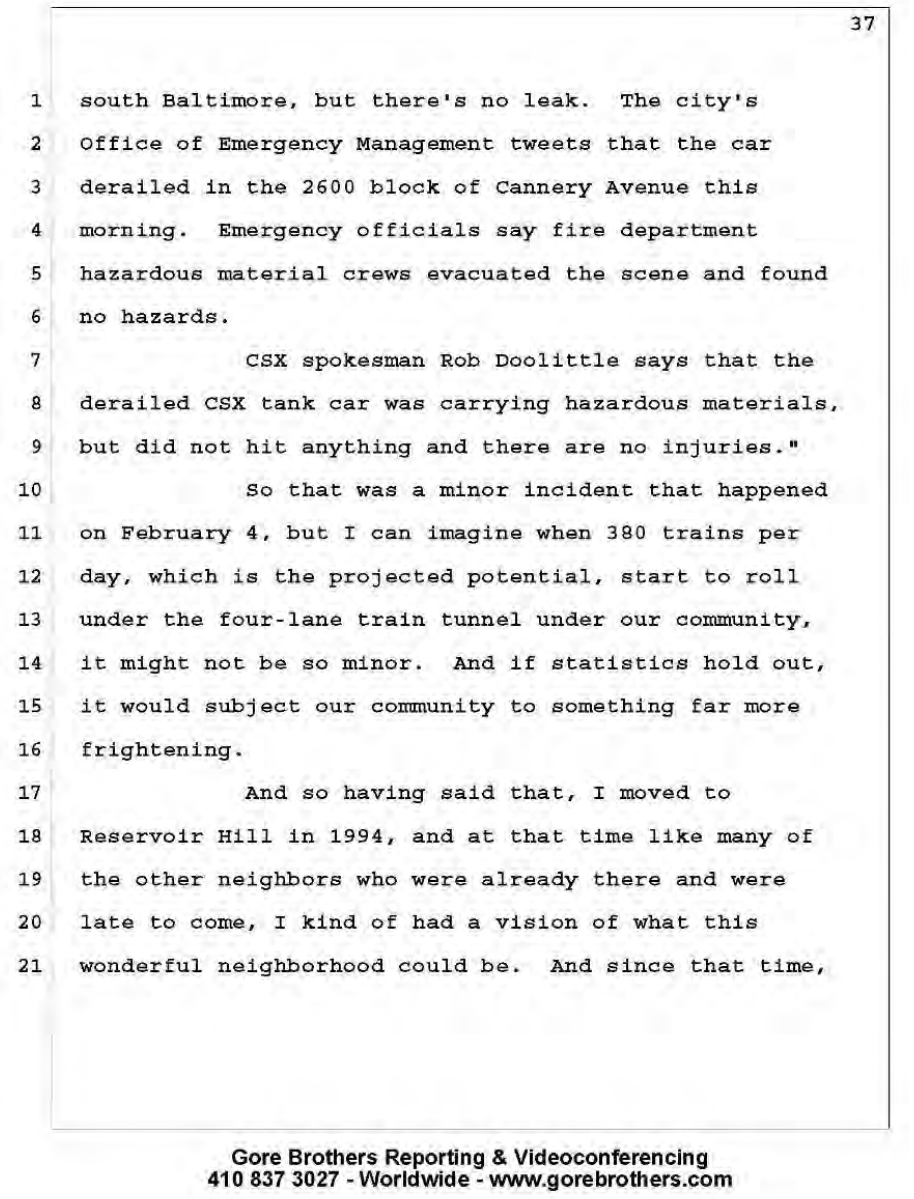
The first is train safety. My second concern is the quality of life these tunnels will have on our residents. The historical impact of my particular neighborhood and other neighbors is another concern, aging infrastructure, how these tunnels will affect those things. And financial loss, which I know is going to be a major feature of these tunnels. The last thing I want to say is we don't want no stinking tunnels.

THE HEARING OFFICER: Russ Moss. And Mr. Moss will be followed by Gary Messaman.

MR. MOSS: Good morning. My name is Russ Moss, and I live at Baltimore, 21217. I'd like to start my comments by reading a brief article that was in Thursday's or February 4 Washington Post.

And the headline is: "Train car carrying half a dozen material derails in Baltimore. Officials say a train car carrying hazardous materials derails in

COMMENTS



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south Baltimore, but there's no leak. The city's Office of Emergency Management tweets that the car derailed in the 2600 block of Cannery Avenue this morning. Emergency officials say fire department hazardous material crews evacuated the scene and found no hazards.

CSX spokesman Rob Doolittle says that the derailed CSX tank car was carrying hazardous materials, but did not hit anything and there are no injuries."

1 So that was a minor incident that happened on February 4, but I can imagine when 380 trains per day, which is the projected potential, start to roll under the four-lane train tunnel under our community, it might not be so minor. And if statistics hold out, it would subject our community to something far more frightening.

And so having said that, I moved to Reservoir Hill in 1994, and at that time like many of the other neighbors who were already there and were late to come, I kind of had a vision of what this wonderful neighborhood could be. And since that time,

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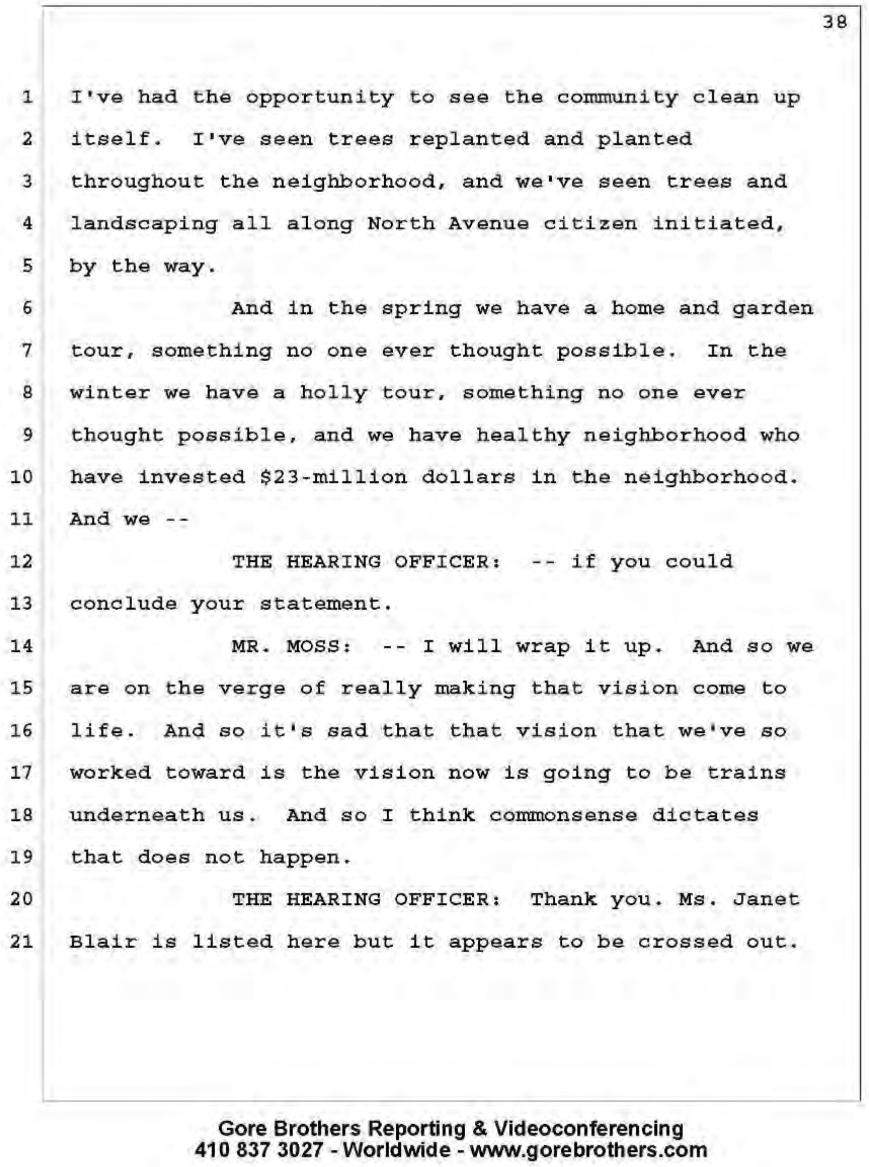
RESPONSES

Response to Comment 1:
Trains are among the safest form of transportation available on an accident per passenger-mile basis. In the unlikely event of an accident, local responders receive training for a variety of incidents related to specific facilities, including the B&P Tunnel. The tunnel would be constructed to meet current standards for fire protection. Additionally, the Project sponsor will develop and implement a Hazardous Spill Prevention Plan and a Hazardous Materials Remediation Plan, as well as an Emergency Management Plan to be implemented in the event of a tunnel emergency.

COMMENTS

RESPONSES



I've had the opportunity to see the community clean up itself. I've seen trees replanted and planted throughout the neighborhood, and we've seen trees and landscaping all along North Avenue citizen initiated, by the way.

And in the spring we have a home and garden tour, something no one ever thought possible. In the winter we have a holly tour, something no one ever thought possible, and we have healthy neighborhood who have invested $23-million dollars in the neighborhood. And we --

THE HEARING OFFICER: -- if you could conclude your statement.

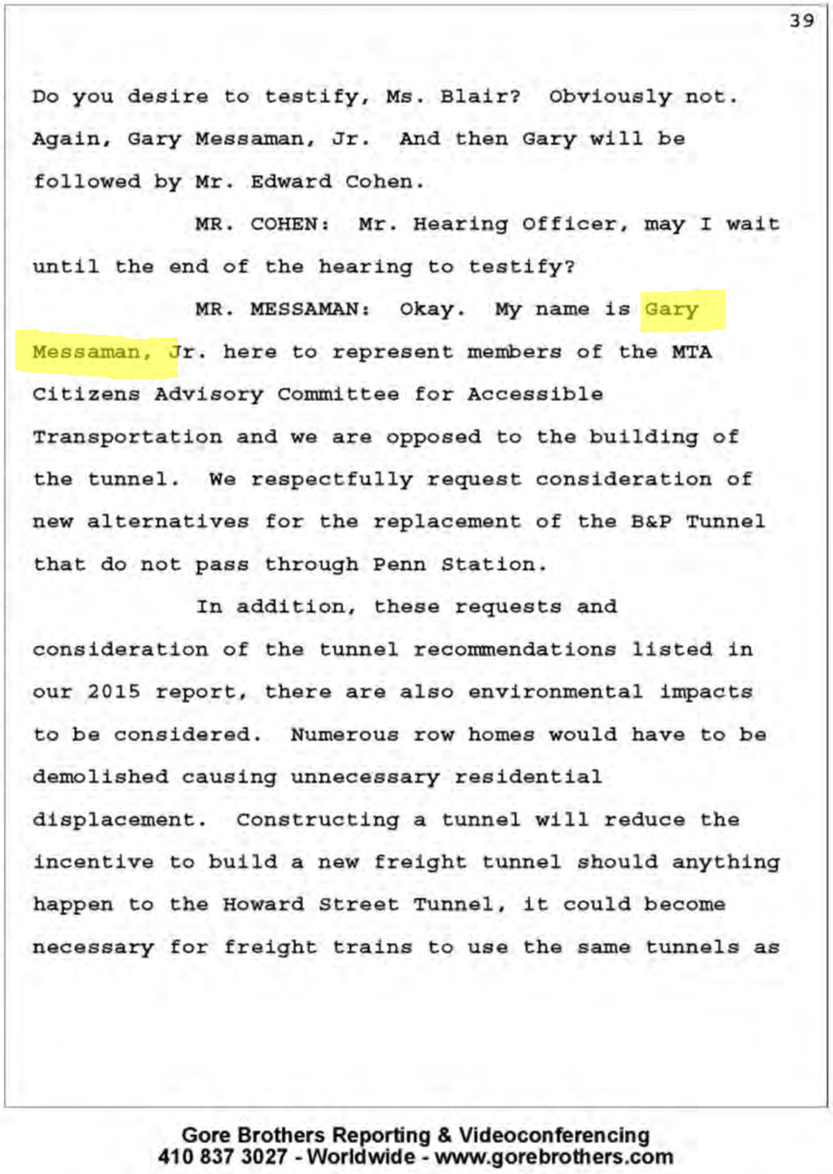
2 MR. MOSS: -- I will wrap it up. And so we are on the verge of really making that vision come to life. And so it's sad that that vision that we've so worked toward is the vision now is going to be trains underneath us. And so I think commonsense dictates that does not happen.

THE HEARING OFFICER: Thank you. Ms. Janet Blair is listed here but it appears to be crossed out.

Response to Comment 2:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

DEIS Comment 127:



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Do you desire to testify, Ms. Blair? Obviously not.
Again, Gary Messaman, Jr. And then Gary will be
followed by Mr. Edward Cohen.

MR. COHEN: Mr. Hearing Officer, may I wait
until the end of the hearing to testify?

MR. MESSAMAN: Okay. My name is Gary
Messaman, Jr. here to represent members of the MTA
Citizens Advisory Committee for Accessible
Transportation and we are opposed to the building of
the tunnel. We respectfully request consideration of
1 new alternatives for the replacement of the B&P Tunnel
that do not pass through Penn Station.

In addition, these requests and
consideration of the tunnel recommendations listed in
our 2015 report, there are also environmental impacts
2 to be considered. Numerous row homes would have to be
demolished causing unnecessary residential
displacement. Constructing a tunnel will reduce the
incentive to build a new freight tunnel should anything
3 happen to the Howard Street Tunnel, it could become
necessary for freight trains to use the same tunnels as

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RESPONSES

Response to Comment 1:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

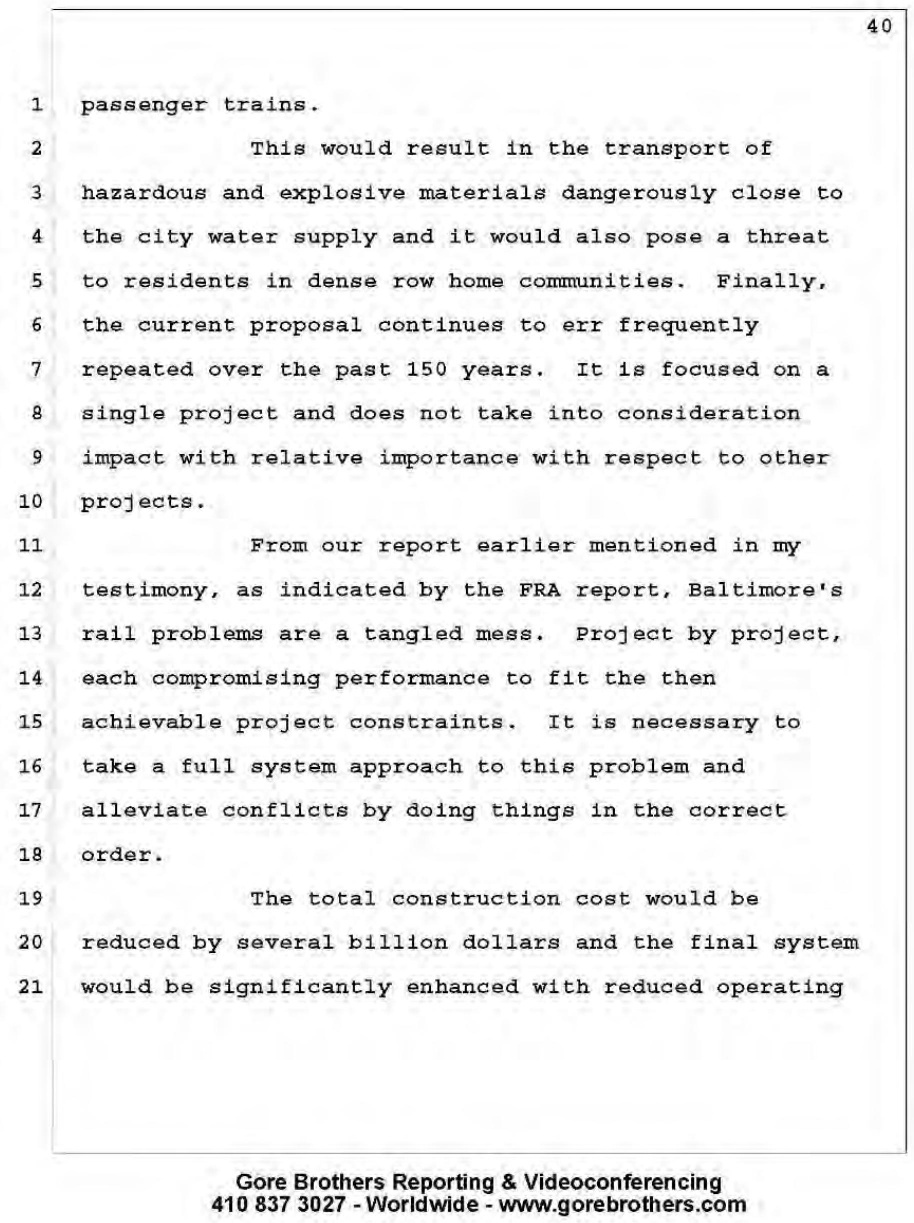
Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

Response to Comment 2:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project

COMMENTS



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passenger trains.
This would result in the transport of
4 hazardous and explosive materials dangerously close to
the city water supply and it would also pose a threat
to residents in dense row home communities. Finally,
the current proposal continues to err frequently
repeated over the past 150 years. It is focused on a
single project and does not take into consideration
impact with relative importance with respect to other
projects.
From our report earlier mentioned in my
testimony, as indicated by the FRA report, Baltimore's
rail problems are a tangled mess. Project by project,
each compromising performance to fit the then
achievable project constraints. It is necessary to
take a full system approach to this problem and
5 alleviate conflicts by doing things in the correct
order.
The total construction cost would be
reduced by several billion dollars and the final system
would be significantly enhanced with reduced operating

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RESPONSES

Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

Executive Order 12898 requires federal agencies to ensure effective, meaningful involvement of low-income and minority populations in project planning and development, and potentially affected EJ populations have fair and equal access to information. The Project Team has engaged in extensive public outreach throughout the development of the Project, including three public open houses and ten community meetings. In addition to these meetings, Mitigation Working Groups comprised of community organization representatives and members of the Project Team were established to determine the most effective mitigation for the Project. Details of this outreach are described in **Chapter VI** and **Chapter VIII.**

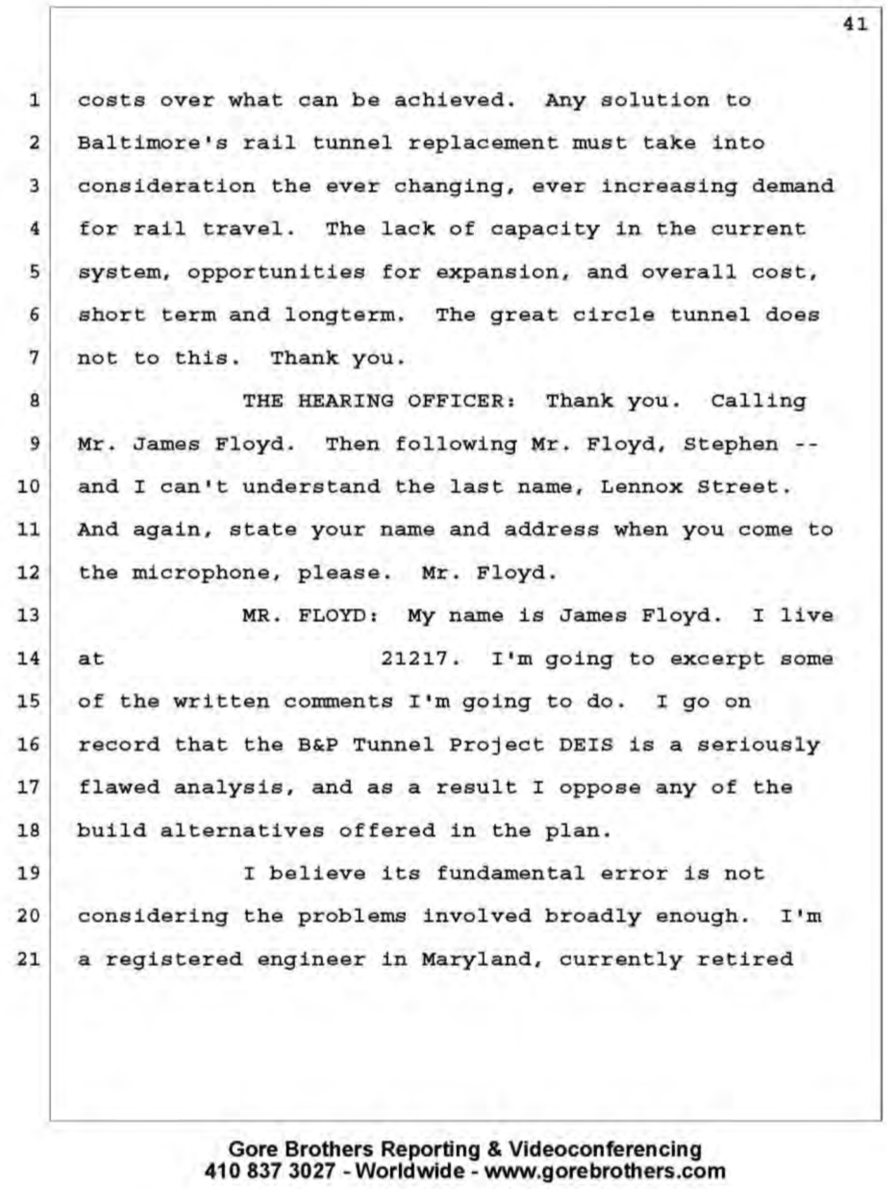
Response to Comment 3:
The purpose of this Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the NEC. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

The Howard Street Tunnel is privately owned by CSX, who is currently studying options to increase capacity there. Those efforts are beyond the purview of the Project.

Response to Comment 4:
Norfolk Southern has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at https://www.fra.dot.gov/Page/P0444. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate*

COMMENTS



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costs over what can be achieved. Any solution to Baltimore's rail tunnel replacement must take into consideration the ever changing, ever increasing demand for rail travel. The lack of capacity in the current system, opportunities for expansion, and overall cost, short term and longterm. The great circle tunnel does not to this. Thank you.

THE HEARING OFFICER: Thank you. Calling Mr. James Floyd. Then following Mr. Floyd, Stephen -- and I can't understand the last name, Lennox Street. And again, state your name and address when you come to the microphone, please. Mr. Floyd.

MR. FLOYD: My name is James Floyd. I live at 21217. I'm going to excerpt some of the written comments I'm going to do. I go on record that the B&P Tunnel Project DEIS is a seriously flawed analysis, and as a result I oppose any of the build alternatives offered in the plan.

I believe its fundamental error is not considering the problems involved broadly enough. I'm a registered engineer in Maryland, currently retired

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RESPONSES

> *compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

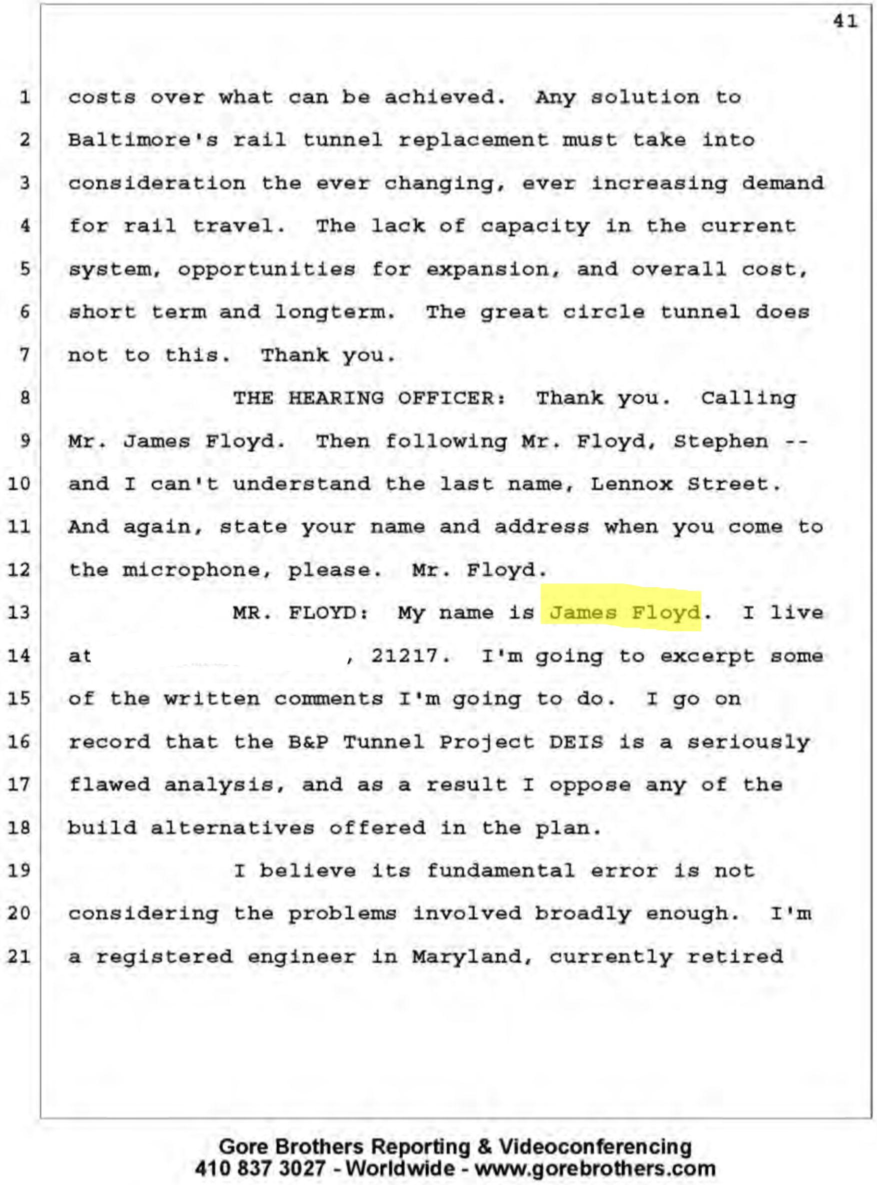
FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Response to Comment 5:
The Maryland Department of Transportation oversees comprehensive transportation planning for the State. Prior studies have been performed that evaluate the full network of rail corridors, especially those in and around the City of Baltimore. The study of the B&P Tunnel partly resulted from the identification of this project as a critical component to the greater rail access plan.

COMMENTS

DEIS Comment 128:



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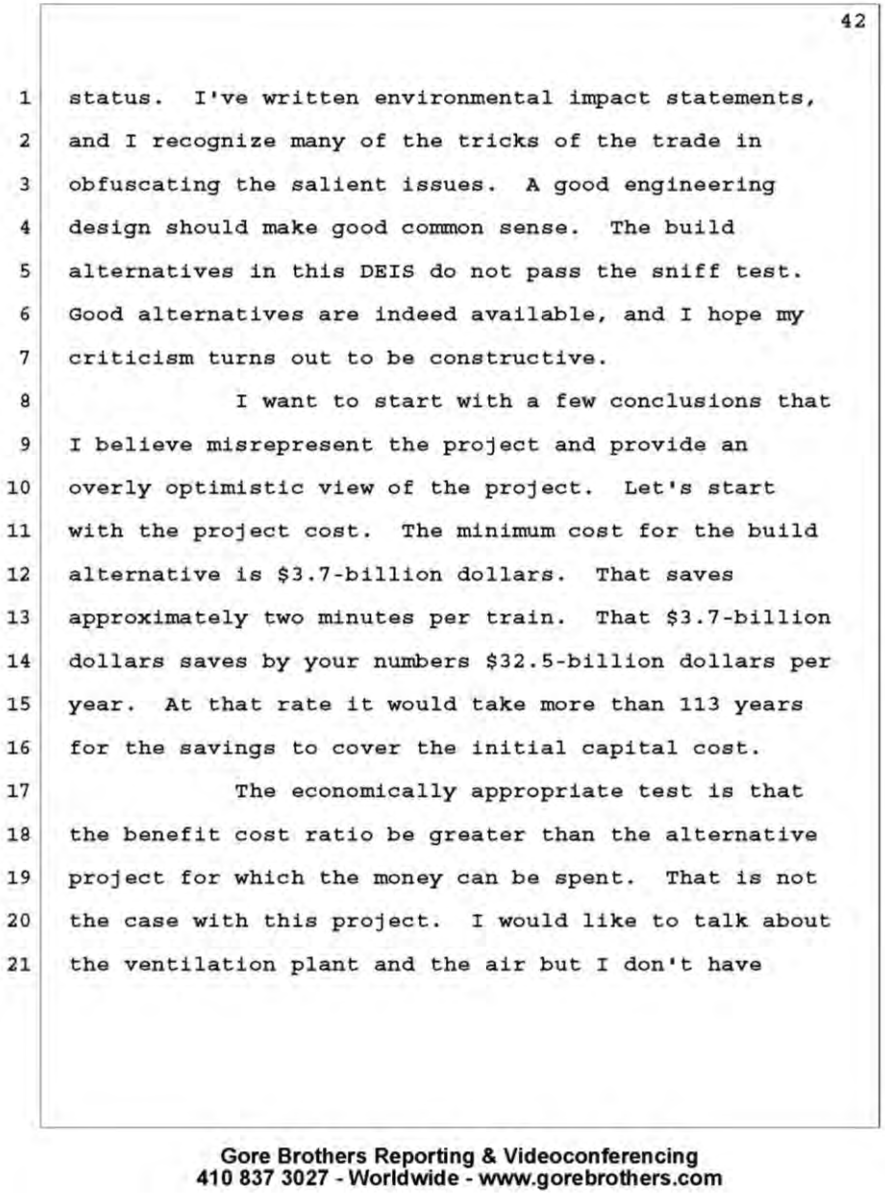
RESPONSES

Response to Comment 1:
Please refer to **DEIS Comment #39** for corresponding written comments.

COMMENTS



status. I've written environmental impact statements,
and I recognize many of the tricks of the trade in
obfuscating the salient issues. A good engineering
design should make good common sense. The build
2 alternatives in this DEIS do not pass the sniff test.
Good alternatives are indeed available, and I hope my
criticism turns out to be constructive.

I want to start with a few conclusions that
I believe misrepresent the project and provide an
overly optimistic view of the project. Let's start
with the project cost. The minimum cost for the build
3 alternative is $3.7-billion dollars. That saves
approximately two minutes per train. That $3.7-billion
dollars saves by your numbers $32.5-billion dollars per
year. At that rate it would take more than 113 years
for the savings to cover the initial capital cost.

The economically appropriate test is that
the benefit cost ratio be greater than the alternative
project for which the money can be spent. That is not
the case with this project. I would like to talk about
the ventilation plant and the air but I don't have

RESPONSES

Response to Comment 2:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

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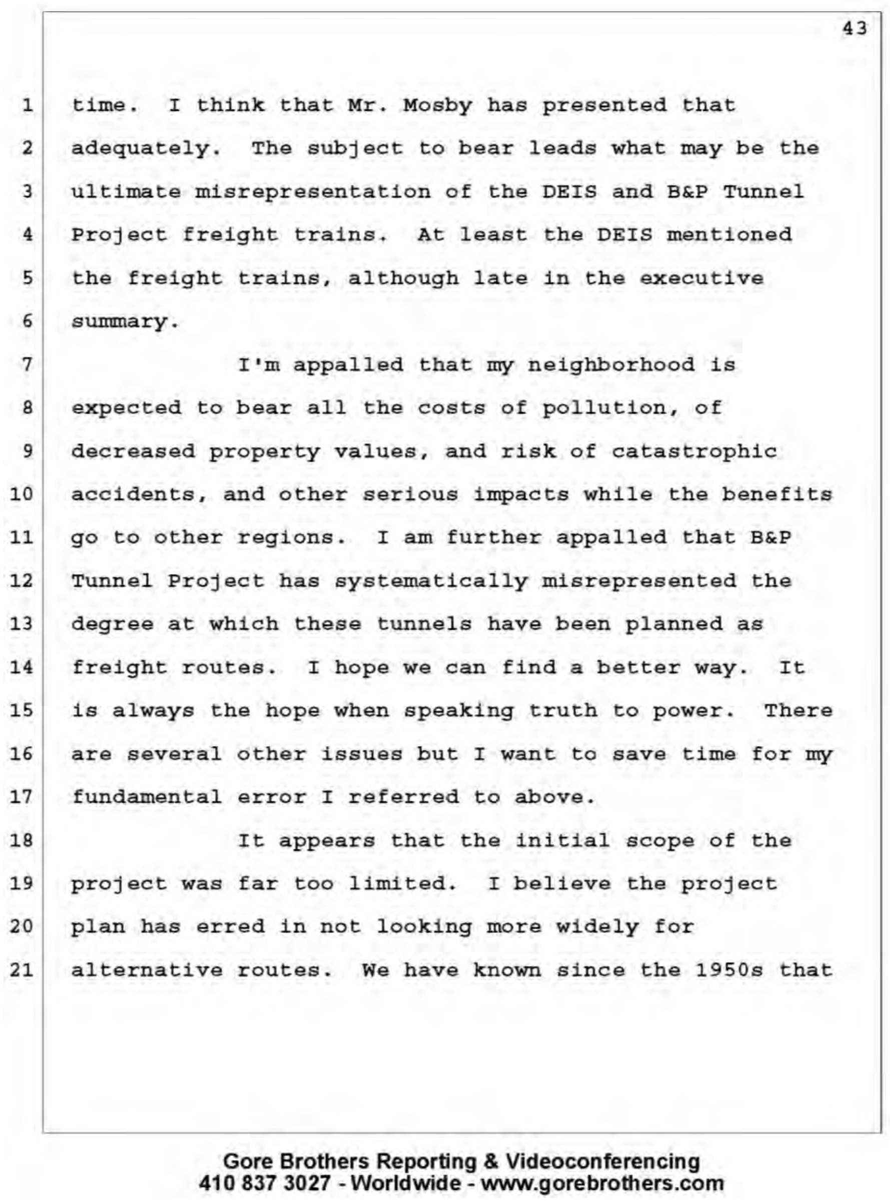
Response to Comment 3:
While reducing travel time through the B&P Tunnel and along the NEC is a goal of the Project, it is not the sole reason the Project was initiated. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS. Goals of the Project include:

- Reducing travel time through the B&P Tunnel and along the NEC,
- Accommodating existing and projected travel demand for intercity and commuter passenger services,
- Eliminating impediments to existing and projected operations along the NEC, and
- Providing operational reliability, while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

COMMENTS



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time. I think that Mr. Mosby has presented that
adequately. The subject to bear leads what may be the
ultimate misrepresentation of the DEIS and B&P Tunnel
4 Project freight trains. At least the DEIS mentioned
the freight trains, although late in the executive
summary.

I'm appalled that my neighborhood is
5 expected to bear all the costs of pollution, of
decreased property values, and risk of catastrophic
accidents, and other serious impacts while the benefits
go to other regions. I am further appalled that B&P
Tunnel Project has systematically misrepresented the
6 degree at which these tunnels have been planned as
freight routes. I hope we can find a better way. It
is always the hope when speaking truth to power. There
are several other issues but I want to save time for my
fundamental error I referred to above.

It appears that the initial scope of the
project was far too limited. I believe the project
7 plan has erred in not looking more widely for
alternative routes. We have known since the 1950s that

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RESPONSES

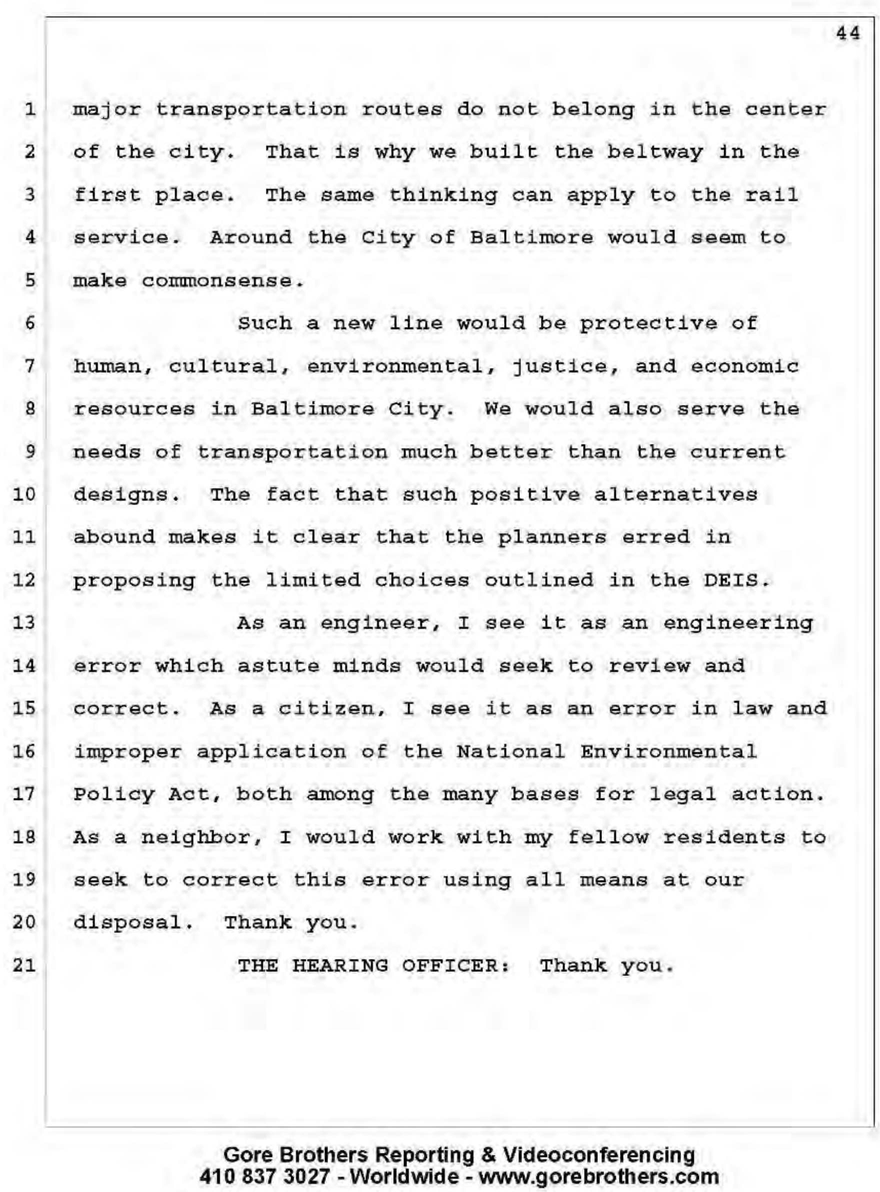
Response to Comment 4:
The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes.

Response to Comment 5:
Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am to 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**.

COMMENTS



major transportation routes do not belong in the center of the city. That is why we built the beltway in the first place. The same thinking can apply to the rail service. Around the City of Baltimore would seem to make commonsense.

Such a new line would be protective of
8 human, cultural, environmental, justice, and economic
resources in Baltimore City. We would also serve the
needs of transportation much better than the current
designs. The fact that such positive alternatives
abound makes it clear that the planners erred in
proposing the limited choices outlined in the DEIS.

As an engineer, I see it as an engineering error which astute minds would seek to review and correct. As a citizen, I see it as an error in law and improper application of the National Environmental Policy Act, both among the many bases for legal action.
As a neighbor, I would work with my fellow residents to
9 seek to correct this error using all means at our
disposal. Thank you.

THE HEARING OFFICER: Thank you.

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RESPONSES

The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

To prevent accidents and fires, FRA requires a range of measures that minimize the risk to the public, including emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA). Emergency access/egress for pedestrians would be accomplished via emergency exits no farther than 2,500 feet apart or cross-passages between tunnels every 800 feet or less, or in some situations, a combination of both. For the Preferred Alternative, three locations would be provided for emergency egress to the surface, working with cross-passages in the tunnels. The emergency egress to ground level would be provided at the south portal Ventilation Facility, via the Intermediate Ventilation Facility, and at the north portal Ventilation Facility.

The ventilation facilities would be an essential Life/Safety component of the build alternatives, beyond their function of providing emergency access/egress for the tunnels. The ventilation facilities would include an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, and silencers and dampers. In the unlikely event of a fire, smoke could emerge from the vents, as is the case with any structural fire. The ventilation facilities and fans are built so that smoke emerging from the Tunnel would be projected up and away from the community. In the very rare event of a tunnel fire, the path from a fire to the exhaust louvers is long and circuitous, with many bends that reduce the ability of particles to travel through the fans and louvers.

The Project has been planned mostly underground in order to avoid greater impacts to the community. Fire in a tunnel is much less damaging to a community than an above-ground track running through the neighborhood. The new B&P Tunnel will be designed to be better equipped and prepared than the current B&P Tunnel.

Response to Comment 6:
Amtrak's first priority is to its passenger services. Therefore, although Amtrak must accommodate requests from NS or other freight operators with trackage rights agreements for additional train moves on the NEC, Amtrak need only schedule such moves as space between passenger trains can be made available. Where the freight operator and Amtrak have a dispute about scheduling of freight moves, the Surface Transportation Board (STB) adjudicates trackage rights agreements.

COMMENTS	RESPONSES

For the past several years, only one local NS freight train has been operating through the B&P Tunnel daily, serving customers south of the B&P Tunnel between Baltimore and Washington, DC. NS has no plans to increase or change its B&P Tunnel freight operation in the near future. NS has, however, restated its contractual right to increase freight operations in the future should it see value in doing so. In addition, the agreements provide that Amtrak cannot take any action that may restrict future growth in freight traffic through the B&P Tunnel.

Response to Comment 7:
Please refer to Response to Comment 1 for information regarding the alternatives analysis. An alternative was considered to have a fatal flaw if it did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge. The viable alternatives are close to the existing Tunnel in order to utilize existing infrastructure.

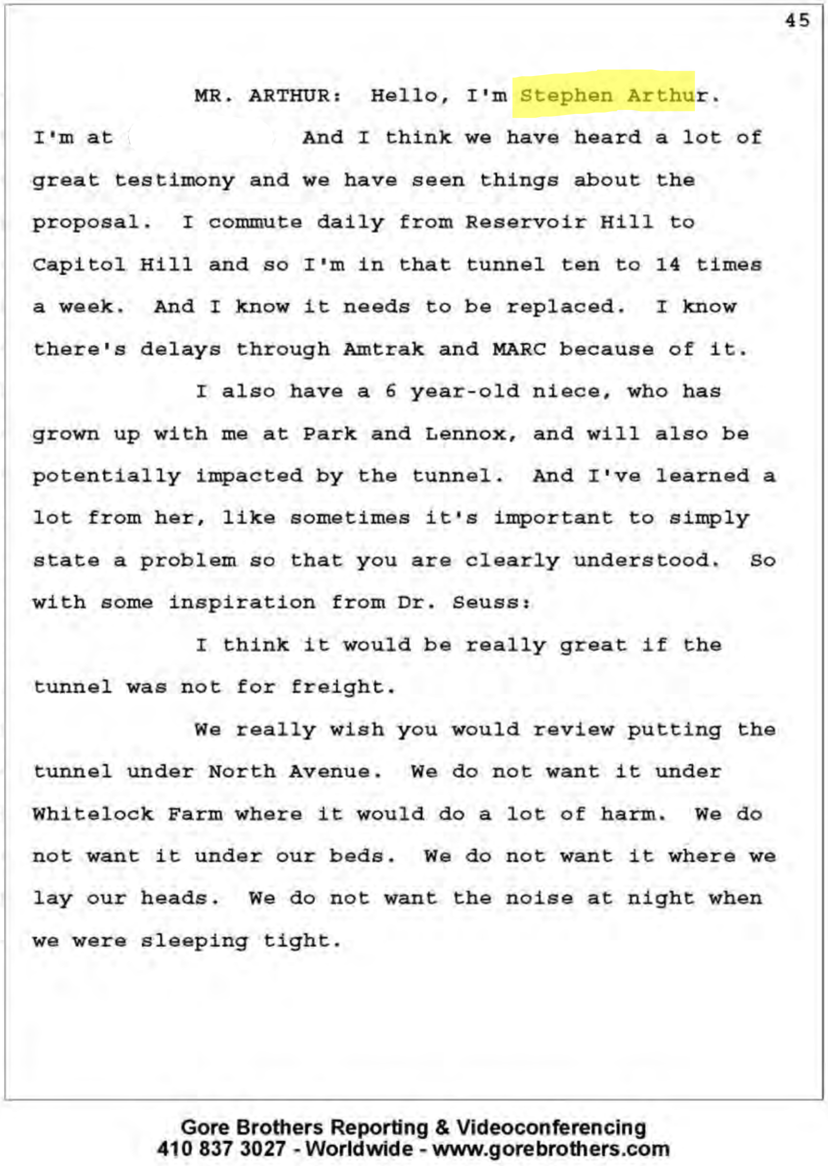
Response to Comment 8:
The Maryland Department of Transportation oversees comprehensive transportation planning for the State. Prior studies have been performed that evaluate the full network of rail corridors, especially those in and around the City of Baltimore. The study of the B&P Tunnel partly resulted from the identification of this project as a critical component to the greater rail access plan.

While recommendations for a new line might aid in resolving issues at a regional level, they would not address or resolve the specific needs of the B&P Tunnel. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life. It is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. For additional information regarding the purpose and need of the Project, please see **Chapter II** of this FEIS.

Response to Comment 9:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others), as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

DEIS Comment 129:



MR. ARTHUR: Hello, I'm Stephen Arthur. I'm at And I think we have heard a lot of great testimony and we have seen things about the proposal. I commute daily from Reservoir Hill to Capitol Hill and so I'm in that tunnel ten to 14 times a week. And I know it needs to be replaced. I know there's delays through Amtrak and MARC because of it.

I also have a 6 year-old niece, who has grown up with me at Park and Lennox, and will also be potentially impacted by the tunnel. And I've learned a lot from her, like sometimes it's important to simply state a problem so that you are clearly understood. So with some inspiration from Dr. Seuss:

1 I think it would be really great if the tunnel was not for freight.

We really wish you would review putting the
2 tunnel under North Avenue. We do not want it under
3 Whitelock Farm where it would do a lot of harm. We do
not want it under our beds. We do not want it where we
lay our heads. We do not want the noise at night when
we were sleeping tight.

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RESPONSES

Response to Comment 1:

The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic is planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces of rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

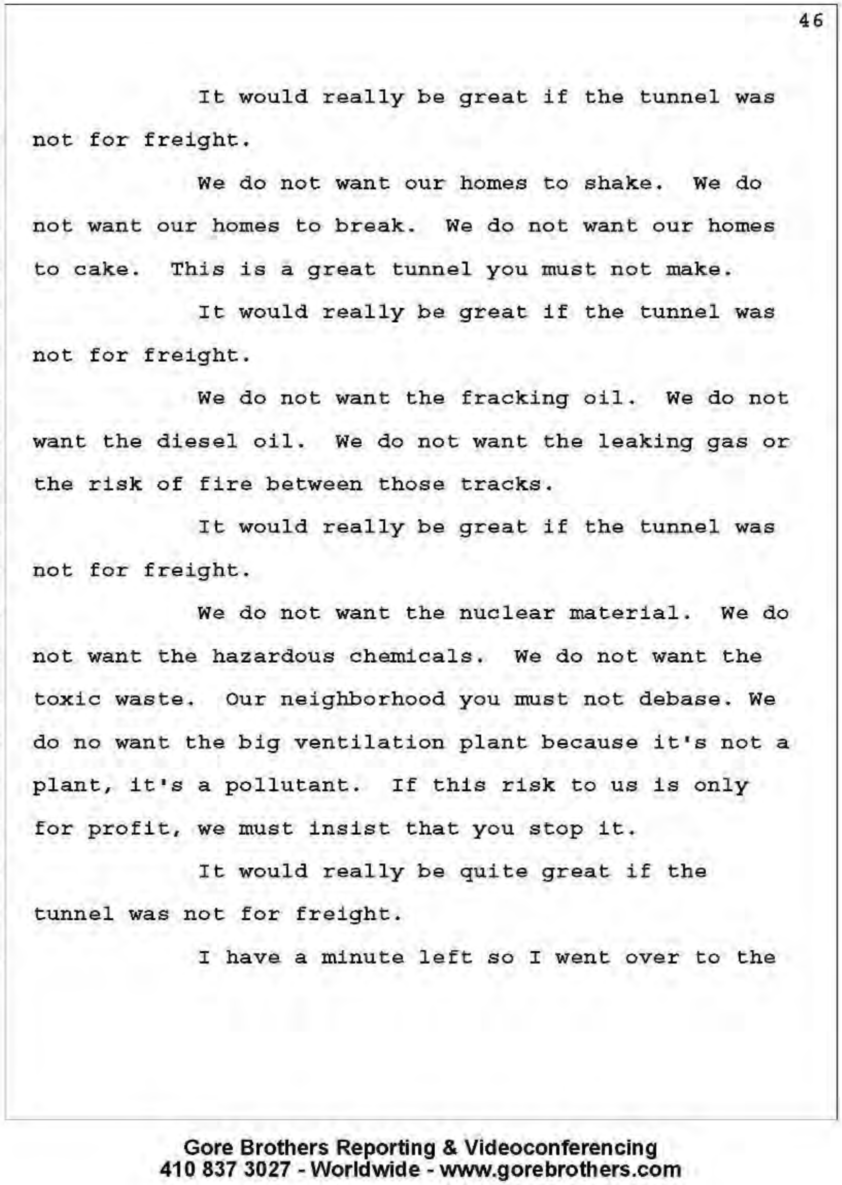
Response to Comment 2:

As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Since the publication of the DEIS, Alternative 3B was selected as the Preferred Alternative. Alternative 3B was advanced through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts,

COMMENTS



It would really be great if the tunnel was
not for freight.
We do not want our homes to shake. We do
4 not want our homes to break. We do not want our homes
to cake. This is a great tunnel you must not make.
It would really be great if the tunnel was
not for freight.
We do not want the fracking oil. We do not
5 want the diesel oil. We do not want the leaking gas or
the risk of fire between those tracks.
It would really be great if the tunnel was
not for freight.
We do not want the nuclear material. We do
not want the hazardous chemicals. We do not want the
toxic waste. Our neighborhood you must not debase. We
6 do no want the big ventilation plant because it's not a
plant, it's a pollutant. If this risk to us is only
for profit, we must insist that you stop it.
It would really be quite great if the
tunnel was not for freight.
I have a minute left so I went over to the

RESPONSES

particularly to residences and historic resources. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the selection of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

Response to Comment 3:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 4:
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated

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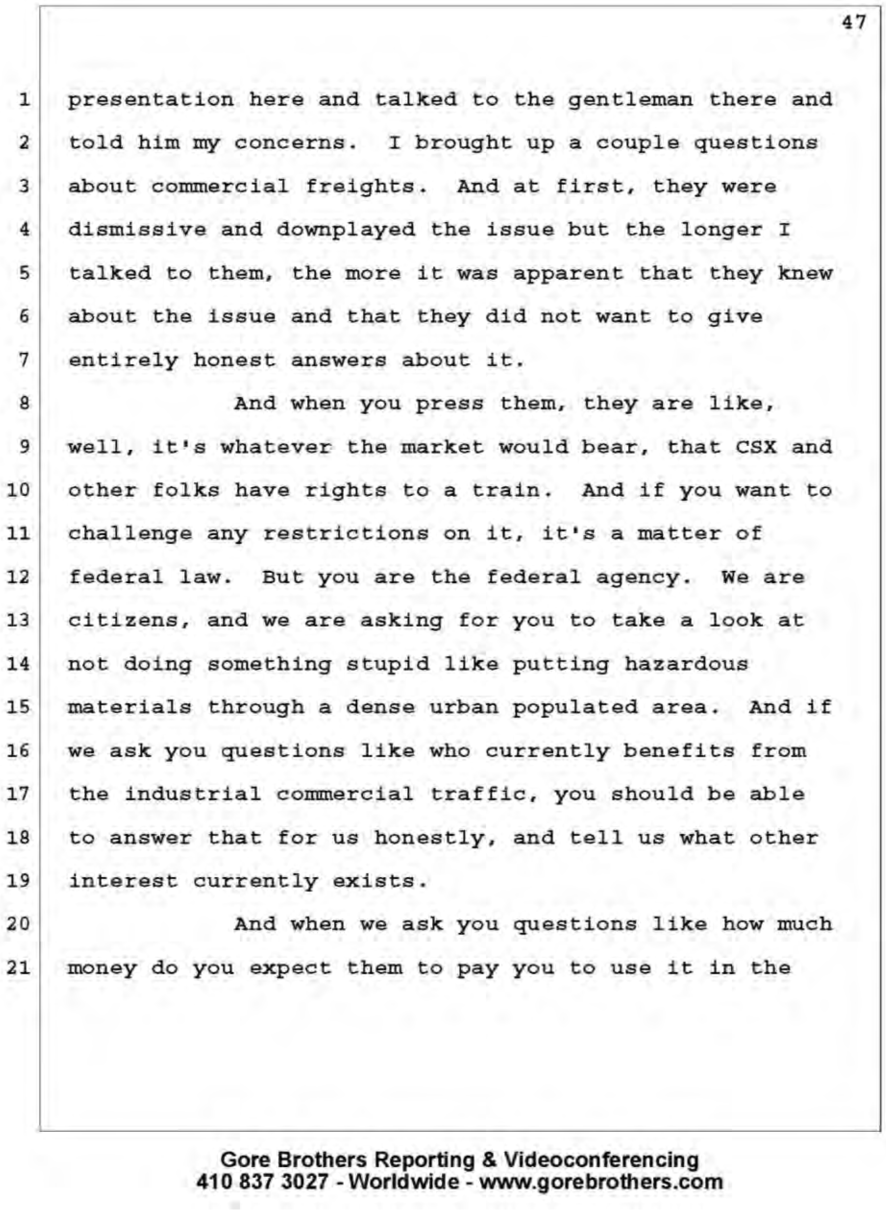

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presentation here and talked to the gentleman there and told him my concerns. I brought up a couple questions about commercial freights. And at first, they were dismissive and downplayed the issue but the longer I talked to them, the more it was apparent that they knew about the issue and that they did not want to give entirely honest answers about it.

And when you press them, they are like, well, it's whatever the market would bear, that CSX and other folks have rights to a train. And if you want to challenge any restrictions on it, it's a matter of federal law. But you are the federal agency. We are citizens, and we are asking for you to take a look at not doing something stupid like putting hazardous materials through a dense urban populated area. And if we ask you questions like who currently benefits from the industrial commercial traffic, you should be able to answer that for us honestly, and tell us what other interest currently exists.

7 And when we ask you questions like how much money do you expect them to pay you to use it in the

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here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

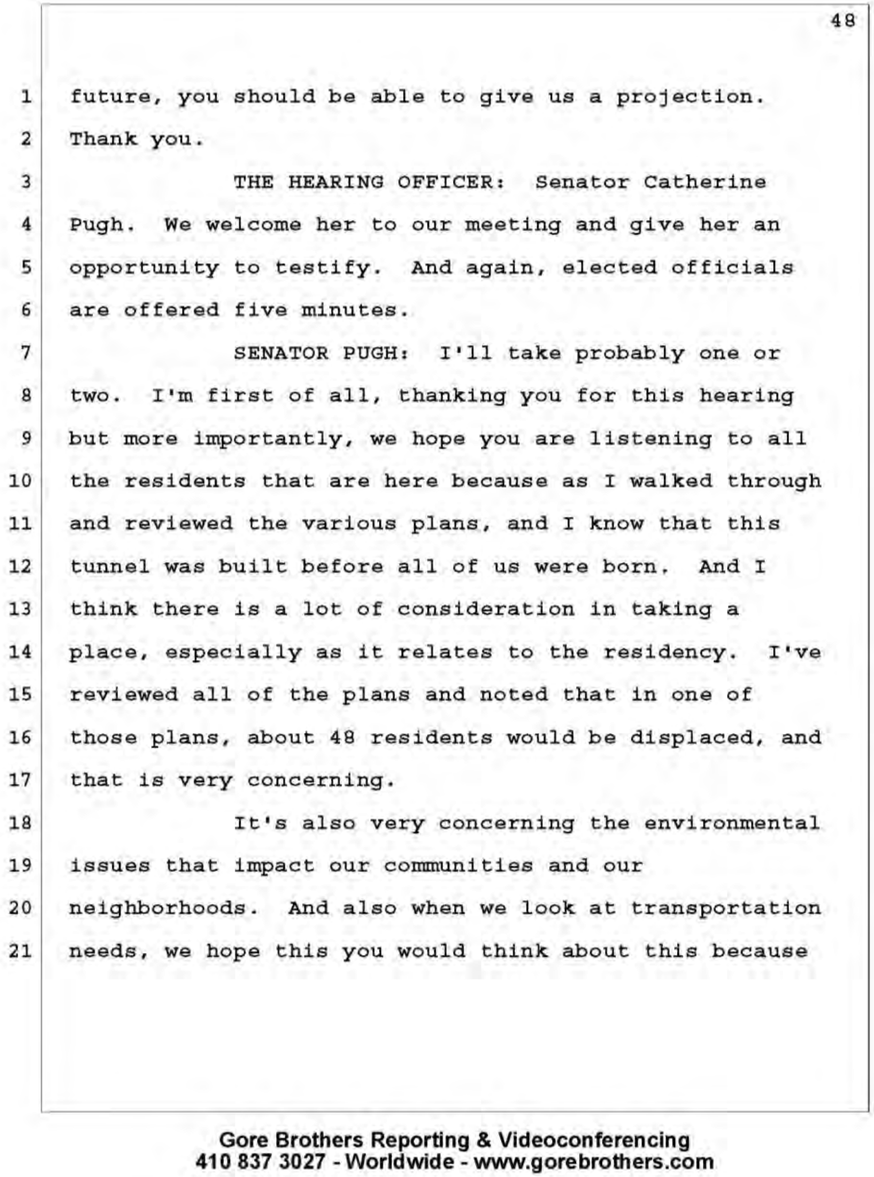
All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

Response to Comment 5:
Norfolk Southern has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system,*

COMMENTS



future, you should be able to give us a projection. Thank you.

THE HEARING OFFICER: Senator Catherine Pugh. We welcome her to our meeting and give her an opportunity to testify. And again, elected officials are offered five minutes.

SENATOR PUGH: I'll take probably one or two. I'm first of all, thanking you for this hearing but more importantly, we hope you are listening to all the residents that are here because as I walked through and reviewed the various plans, and I know that this tunnel was built before all of us were born. And I think there is a lot of consideration in taking a place, especially as it relates to the residency. I've reviewed all of the plans and noted that in one of those plans, about 48 residents would be displaced, and that is very concerning.

It's also very concerning the environmental issues that impact our communities and our neighborhoods. And also when we look at transportation needs, we hope this you would think about this because

RESPONSES

> *including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

Response to Comment 6:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

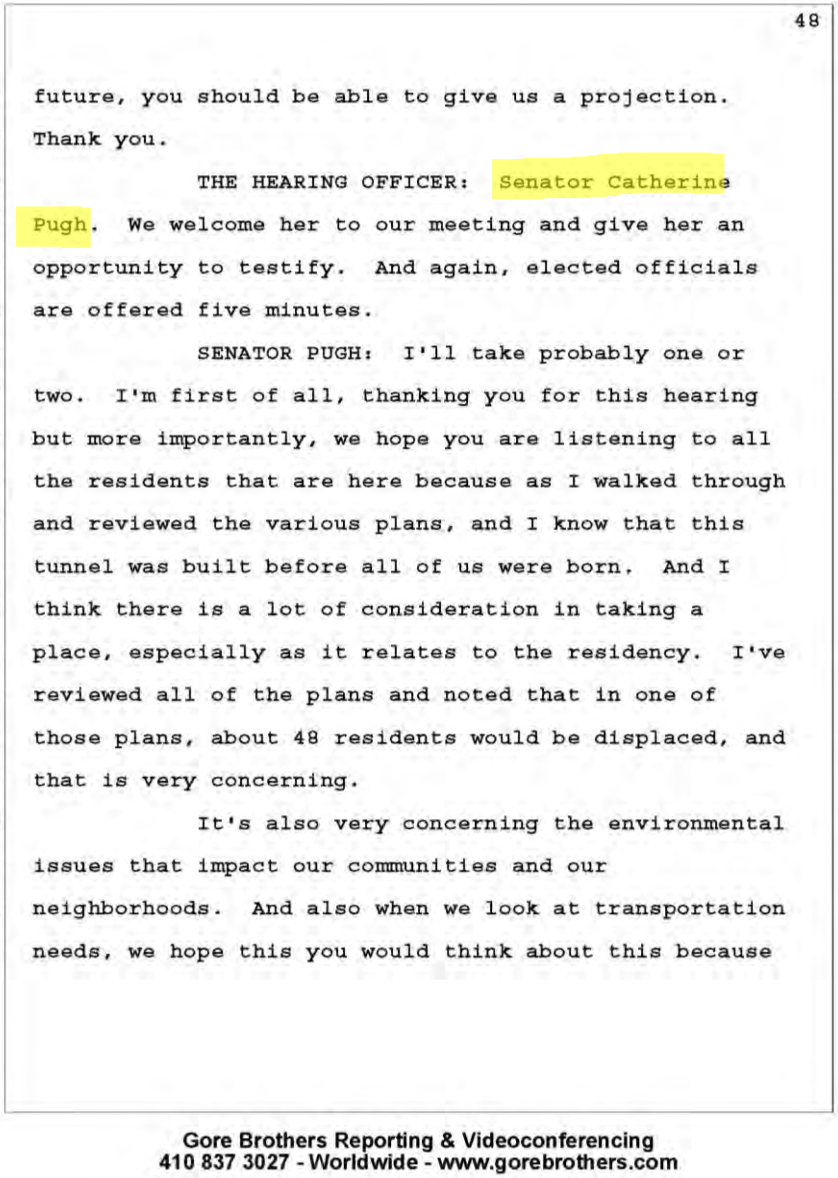
Response to Comment 7:
Efficient transport of goods provides economic benefit to the City, region, and rail consumers.

The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future.

It is not possible to provide cost projections for private usage of the B&P Tunnel. The owner of the tunnel, Amtrak, is a private company, as are the freight companies that may use the tunnel in the future. NS and CSX are not required to release information on projected financials or similar information considered to be proprietary. Furthermore, it is not clear whether these companies have projected costs. Fees are unknown because usage is unknown. For more information on the relationship between the freight industry and the rail line, please see **Chapter V** of this FEIS.

COMMENTS

DEIS Comment 130:



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future, you should be able to give us a projection. Thank you.

THE HEARING OFFICER: Senator Catherine Pugh. We welcome her to our meeting and give her an opportunity to testify. And again, elected officials are offered five minutes.

SENATOR PUGH: I'll take probably one or two. I'm first of all, thanking you for this hearing but more importantly, we hope you are listening to all the residents that are here because as I walked through and reviewed the various plans, and I know that this tunnel was built before all of us were born. And I think there is a lot of consideration in taking a place, especially as it relates to the residency. I've reviewed all of the plans and noted that in one of those plans, about 48 residents would be displaced, and that is very concerning. 1

It's also very concerning the environmental issues that impact our communities and our neighborhoods. And also when we look at transportation needs, we hope this you would think about this because

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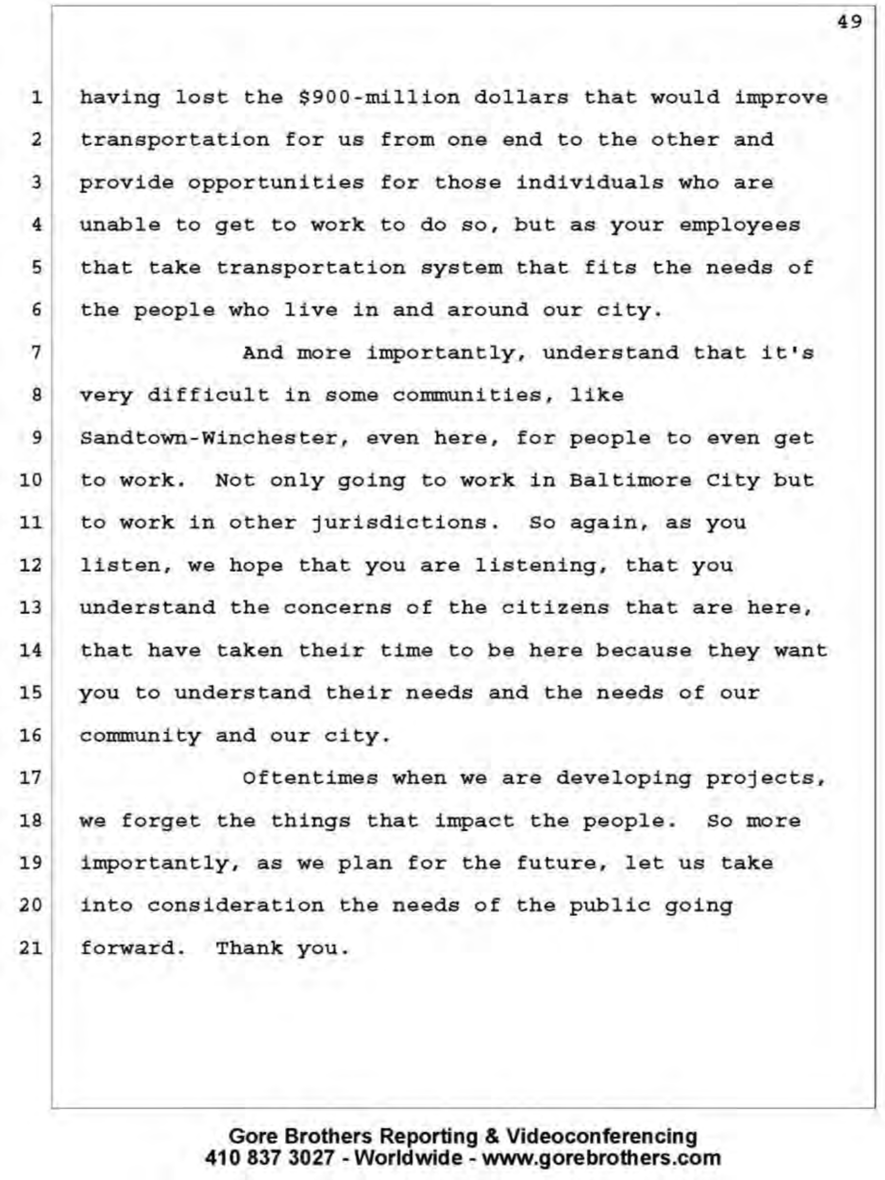
Response to Comment 1:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

The Preferred Alternative would displace 22 residential buildings in the Midtown-Edmondson neighborhood, Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings. Executive Order 12898 requires federal agencies to ensure effective, meaningful involvement of low-income and minority populations in project planning and development, and potentially affected EJ populations have fair and equal access to information. The Project Team has engaged in extensive public outreach throughout the development of the Project, including three public open houses and ten community meetings. In addition to these meetings, Mitigation Working Groups comprised of community organization representatives and members of the Project Team were established to determine the most effective mitigation for the Project. Details of this outreach are described in **Chapter VI** and **Chapter VIII**.

COMMENTS



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having lost the $900-million dollars that would improve transportation for us from one end to the other and provide opportunities for those individuals who are unable to get to work to do so, but as your employees that take transportation system that fits the needs of the people who live in and around our city.

And more importantly, understand that it's very difficult in some communities, like Sandtown-Winchester, even here, for people to even get to work. Not only going to work in Baltimore City but to work in other jurisdictions. So again, as you listen, we hope that you are listening, that you understand the concerns of the citizens that are here, that have taken their time to be here because they want you to understand their needs and the needs of our community and our city. 2

Oftentimes when we are developing projects, we forget the things that impact the people. So more importantly, as we plan for the future, let us take into consideration the needs of the public going forward. Thank you.

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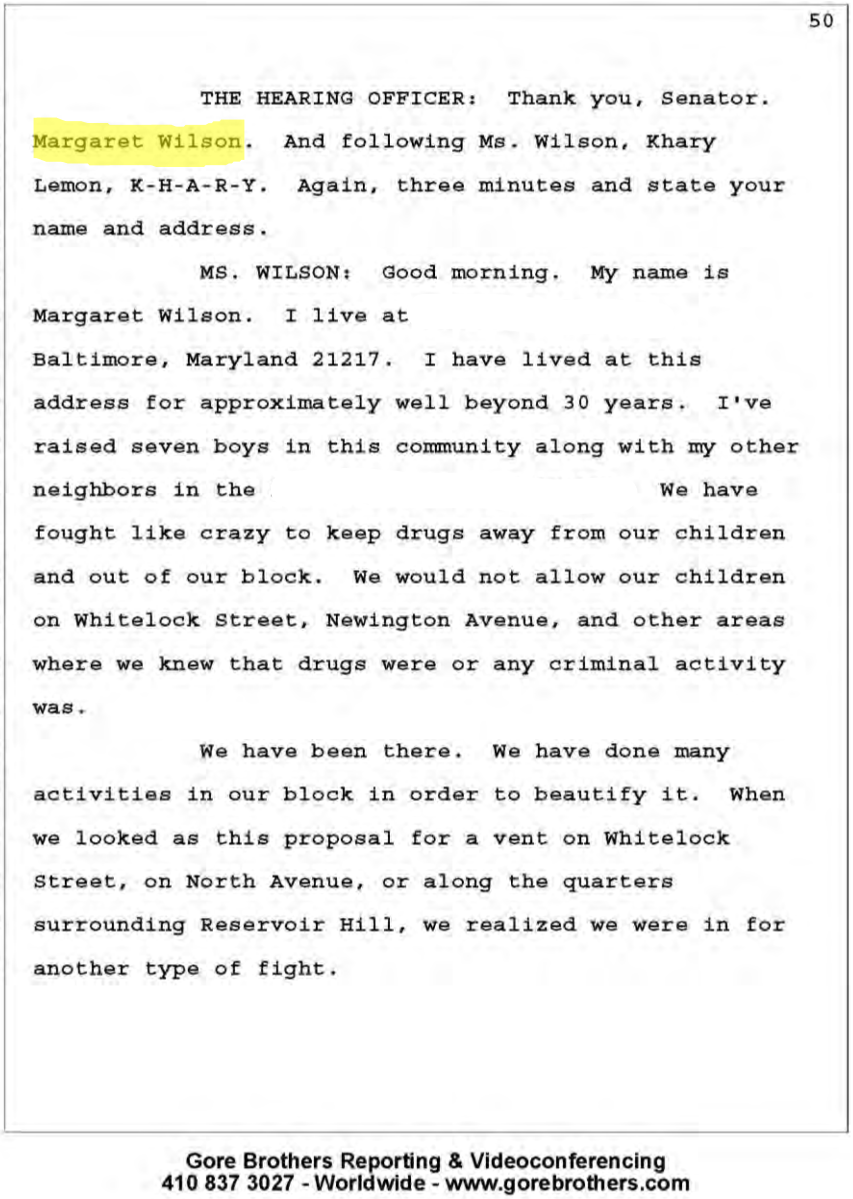
RESPONSES

Response to Comment 2:
The Project Team has engaged in extensive public outreach throughout the development of the project, including holding three public open houses and ten community meetings where the public was given the opportunity to learn about the project and engage in discussion with the Project Team. In addition to these meetings, the Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS. Additional details of this outreach are described in **Chapter VI** as well as **Chapter VIII.**

COMMENTS

RESPONSES

DEIS Comment 131:



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THE HEARING OFFICER: Thank you, Senator. Margaret Wilson. And following Ms. Wilson, Khary Lemon, K-H-A-R-Y. Again, three minutes and state your name and address.

MS. WILSON: Good morning. My name is Margaret Wilson. I live at Baltimore, Maryland 21217. I have lived at this address for approximately well beyond 30 years. I've raised seven boys in this community along with my other neighbors in the We have fought like crazy to keep drugs away from our children and out of our block. We would not allow our children on Whitelock Street, Newington Avenue, and other areas where we knew that drugs were or any criminal activity was.

We have been there. We have done many activities in our block in order to beautify it. When
we looked as this proposal for a vent on Whitelock
Street, on North Avenue, or along the quarters
1 surrounding Reservoir Hill, we realized we were in for
another type of fight.

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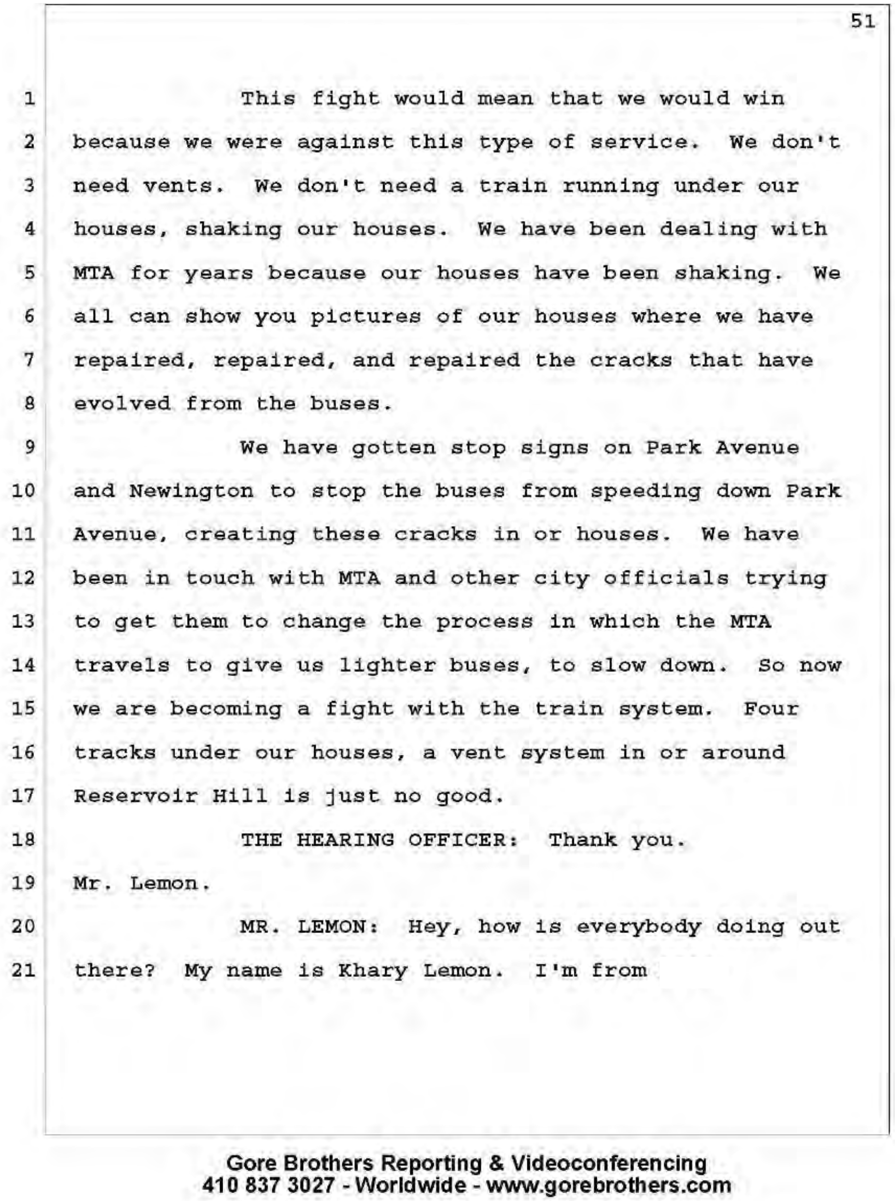
Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS



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This fight would mean that we would win
because we were against this type of service. We don't
need vents. We don't need a train running under our
houses, shaking our houses. We have been dealing with
2 MTA for years because our houses have been shaking. We
all can show you pictures of our houses where we have
repaired, repaired, and repaired the cracks that have
evolved from the buses.

We have gotten stop signs on Park Avenue
and Newington to stop the buses from speeding down Park
Avenue, creating these cracks in or houses. We have
been in touch with MTA and other city officials trying
to get them to change the process in which the MTA
travels to give us lighter buses, to slow down. So now
3 we are becoming a fight with the train system. Four
tracks under our houses, a vent system in or around
Reservoir Hill is just no good.

THE HEARING OFFICER: Thank you. Mr. Lemon.

MR. LEMON: Hey, how is everybody doing out there? My name is Khary Lemon. I'm from

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Response to Comment 2:

As described in **Chapter III** of the FEIS, the build alternatives would require three ventilation facilities in order to meet current safety industry standards (NFPA 130) for projected NEC FUTURE train demand headway, and to ensure proper ventilation of the proposed tunnels. The purpose of the ventilation facility is to pull fresh air into the tunnel and ventilate the tunnel air to the outside. One ventilation facility will be located at the south portal, and another will be located 300-600 feet from the north portal. A third ventilation facility would be located at street level, connected to the bored portion of the tunnels by a vertical shaft and connecting tunnel (plenum), splitting the proposed tunnel into two unequal lengths. The Intermediate Ventilation Facility would consist of a building, approximately 100 feet by 200 feet in plan with a maximum height of 60 feet.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals

COMMENTS

RESPONSES

could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

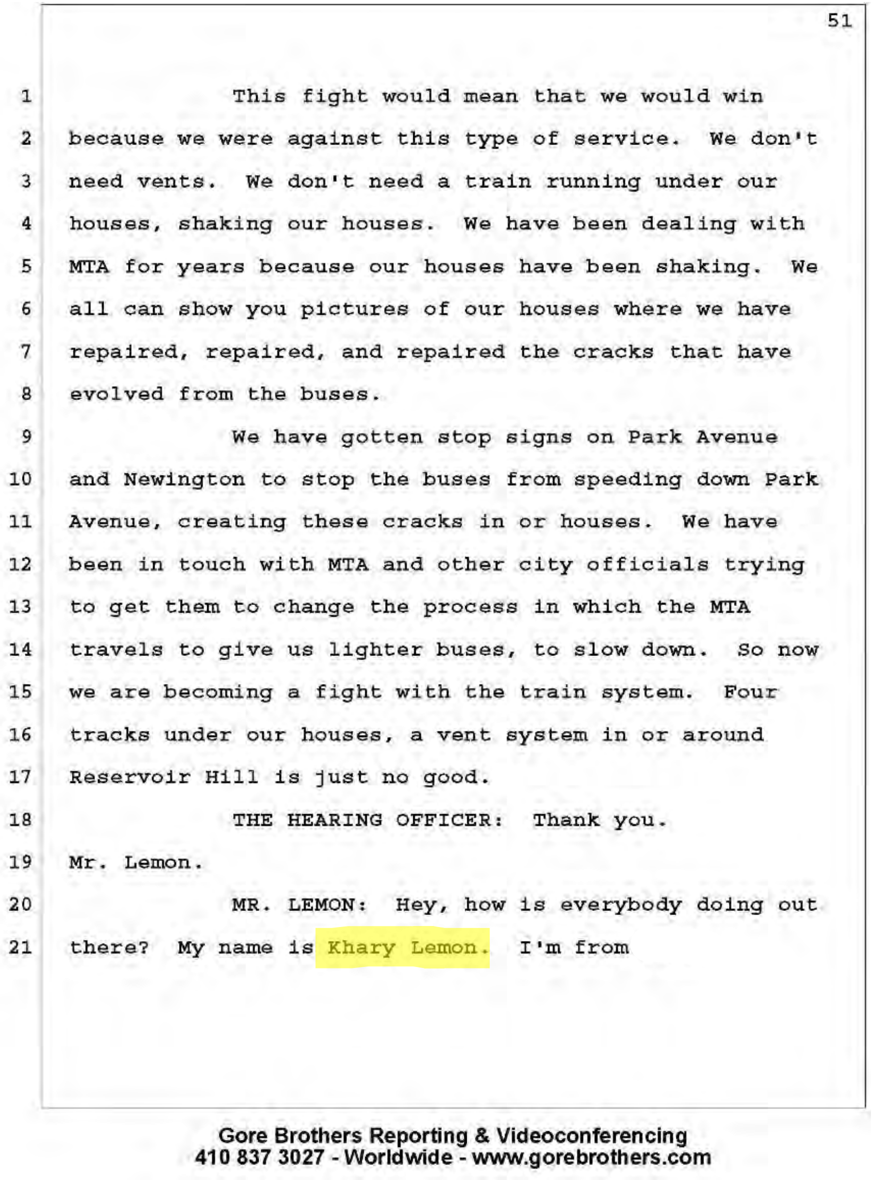
Response to Comment 3:
The Northeast Corridor (NEC) faces serious challenges to meet current and projected travel demand. Responding to these pressing issues, the FRA initiated the NEC FUTURE Environmental Impact Statement as a comprehensive planning process for future investment in the corridor. The NEC FUTURE identified the B&P Tunnel as one of the segments along the NEC that faces capacity constraints and reliability challenges due to multiple chokepoints and state-of-good-repair needs.

Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

COMMENTS

RESPONSES

DEIS Comment 132:



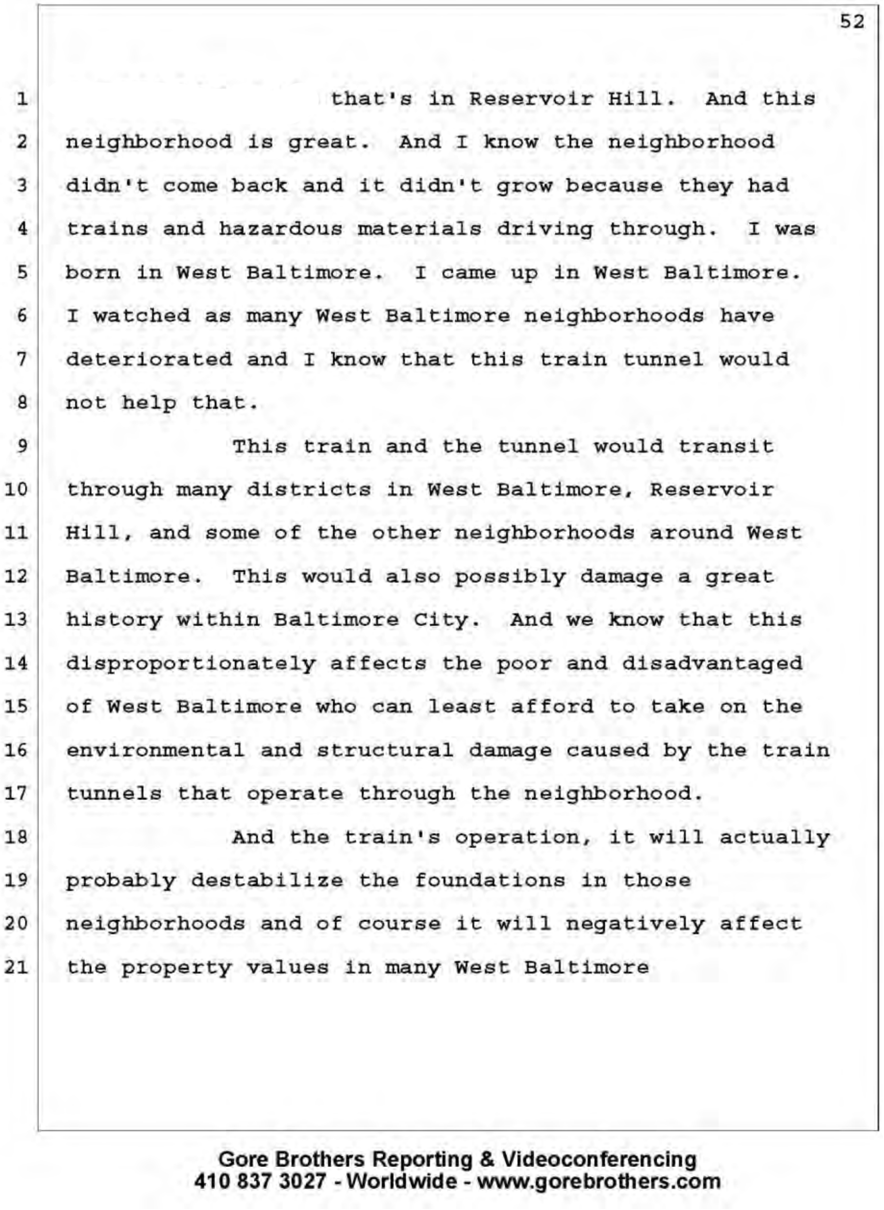
This fight would mean that we would win because we were against this type of service. We don't need vents. We don't need a train running under our houses, shaking our houses. We have been dealing with MTA for years because our houses have been shaking. We all can show you pictures of our houses where we have repaired, repaired, and repaired the cracks that have evolved from the buses.

We have gotten stop signs on Park Avenue and Newington to stop the buses from speeding down Park Avenue, creating these cracks in or houses. We have been in touch with MTA and other city officials trying to get them to change the process in which the MTA travels to give us lighter buses, to slow down. So now we are becoming a fight with the train system. Four tracks under our houses, a vent system in or around Reservoir Hill is just no good.

THE HEARING OFFICER: Thank you. Mr. Lemon.

MR. LEMON: Hey, how is everybody doing out there? My name is Khary Lemon. I'm from

COMMENTS



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that's in Reservoir Hill. And this neighborhood is great. And I know the neighborhood didn't come back and it didn't grow because they had trains and hazardous materials driving through. I was born in West Baltimore. I came up in West Baltimore. I watched as many West Baltimore neighborhoods have deteriorated and I know that this train tunnel would not help that.

1 This train and the tunnel would transit through many districts in West Baltimore, Reservoir Hill, and some of the other neighborhoods around West Baltimore. This would also possibly damage a great history within Baltimore City. And we know that this disproportionately affects the poor and disadvantaged of West Baltimore who can least afford to take on the environmental and structural damage caused by the train tunnels that operate through the neighborhood.

2 And the train's operation, it will actually probably destabilize the foundations in those neighborhoods and of course it will negatively affect the property values in many West Baltimore

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RESPONSES

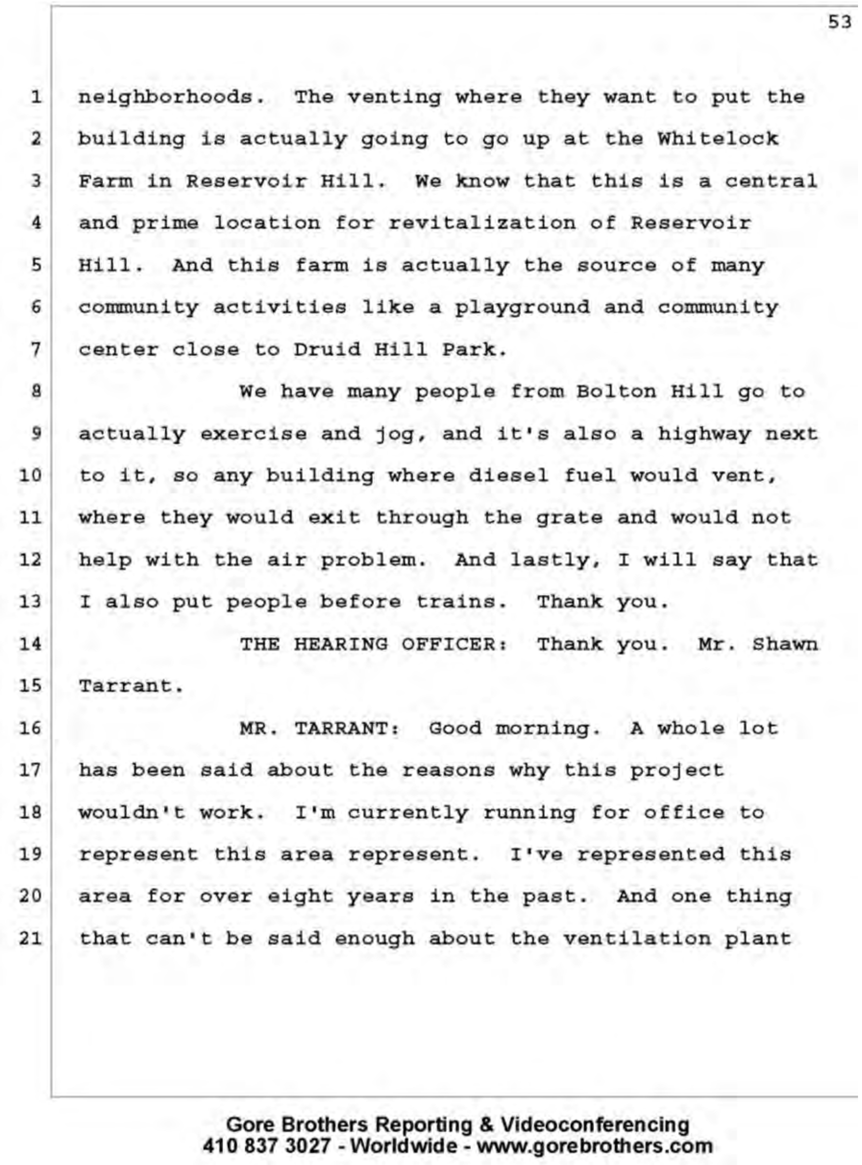
Response to Comment 1:
The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**.

The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

Response to Comment 2:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS



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3 neighborhoods. The venting where they want to put the building is actually going to go up at the Whitelock Farm in Reservoir Hill. We know that this is a central and prime location for revitalization of Reservoir Hill. And this farm is actually the source of many community activities like a playground and community center close to Druid Hill Park.

We have many people from Bolton Hill go to
4 actually exercise and jog, and it's also a highway next to it, so any building where diesel fuel would vent, where they would exit through the grate and would not help with the air problem. And lastly, I will say that I also put people before trains. Thank you.

THE HEARING OFFICER: Thank you. Mr. Shawn Tarrant.

MR. TARRANT: Good morning. A whole lot has been said about the reasons why this project wouldn't work. I'm currently running for office to represent this area represent. I've represented this area for over eight years in the past. And one thing that can't be said enough about the ventilation plant

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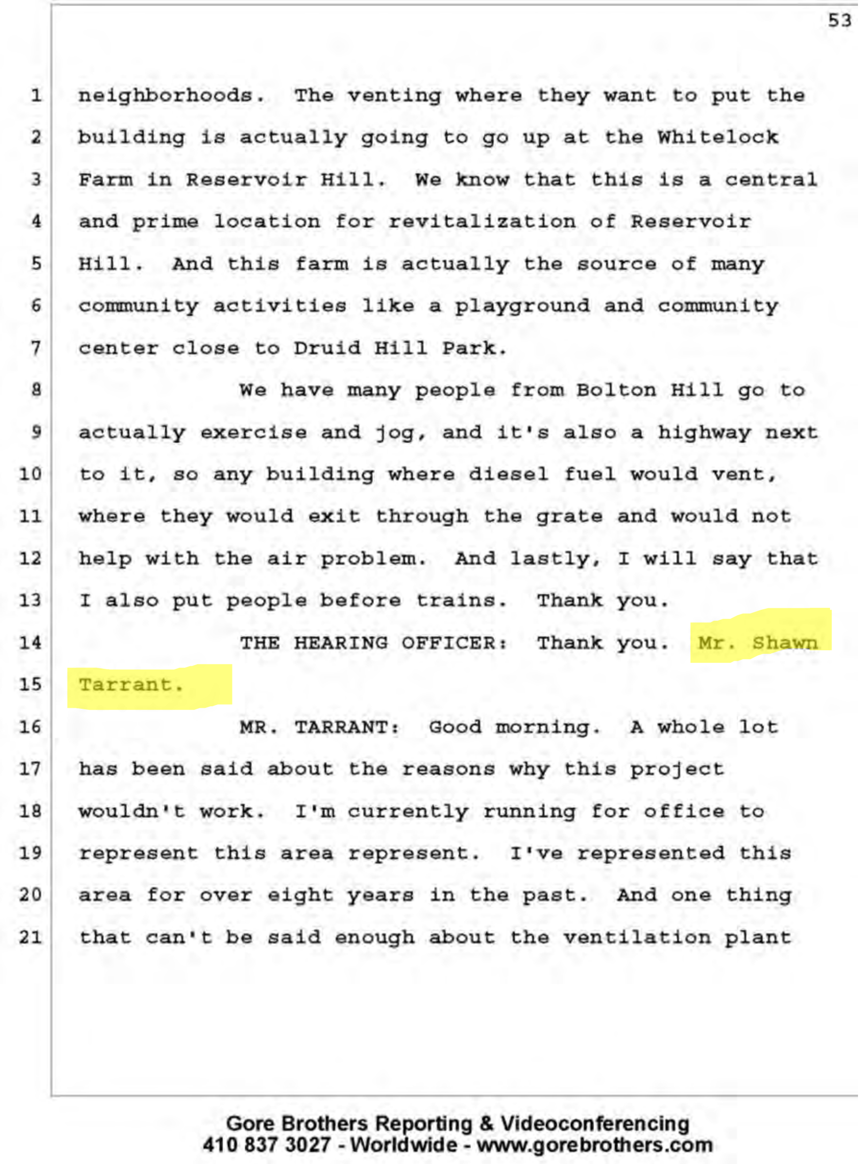
RESPONSES

Response to Comment 3:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 4:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

COMMENTS

DEIS Comment 133:



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neighborhoods. The venting where they want to put the building is actually going to go up at the Whitelock Farm in Reservoir Hill. We know that this is a central and prime location for revitalization of Reservoir Hill. And this farm is actually the source of many community activities like a playground and community center close to Druid Hill Park.

We have many people from Bolton Hill go to actually exercise and jog, and it's also a highway next to it, so any building where diesel fuel would vent, where they would exit through the grate and would not help with the air problem. And lastly, I will say that I also put people before trains. Thank you.

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RESPONSES

Response to Comment 1:
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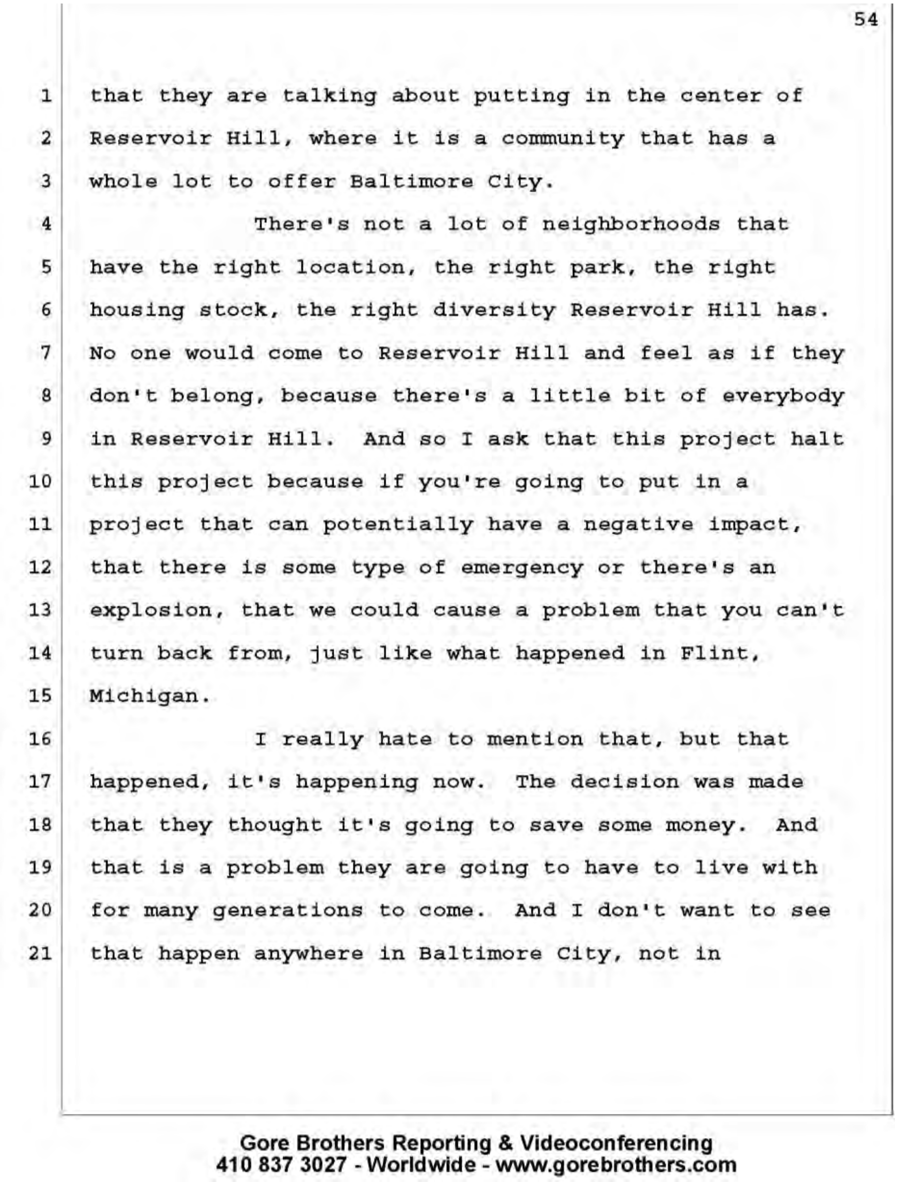
COMMENTS

RESPONSES



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that they are talking about putting in the center of Reservoir Hill, where it is a community that has a whole lot to offer Baltimore City.

There's not a lot of neighborhoods that have the right location, the right park, the right housing stock, the right diversity Reservoir Hill has. No one would come to Reservoir Hill and feel as if they don't belong, because there's a little bit of everybody in Reservoir Hill. And so I ask that this project halt this project because if you're going to put in a project that can potentially have a negative impact, that there is some type of emergency or there's an explosion, that we could cause a problem that you can't turn back from, just like what happened in Flint, Michigan. 2

I really hate to mention that, but that happened, it's happening now. The decision was made that they thought it's going to save some money. And that is a problem they are going to have to live with for many generations to come. And I don't want to see that happen anywhere in Baltimore City, not in

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Response to Comment 2:
Trains are among the safest form of transportation available on an accident per passenger-mile basis. In the unlikely event of an accident, local responders receive training for a variety of incidents related to specific facilities, including the B&P Tunnel. The tunnel would be constructed to meet current standards for fire protection. Additionally, the Project sponsor will develop and implement a Hazardous Spill Prevention Plan and a Hazardous Materials Remediation Plan, as well as an Emergency Management Plan to be implemented in the event of a tunnel emergency.

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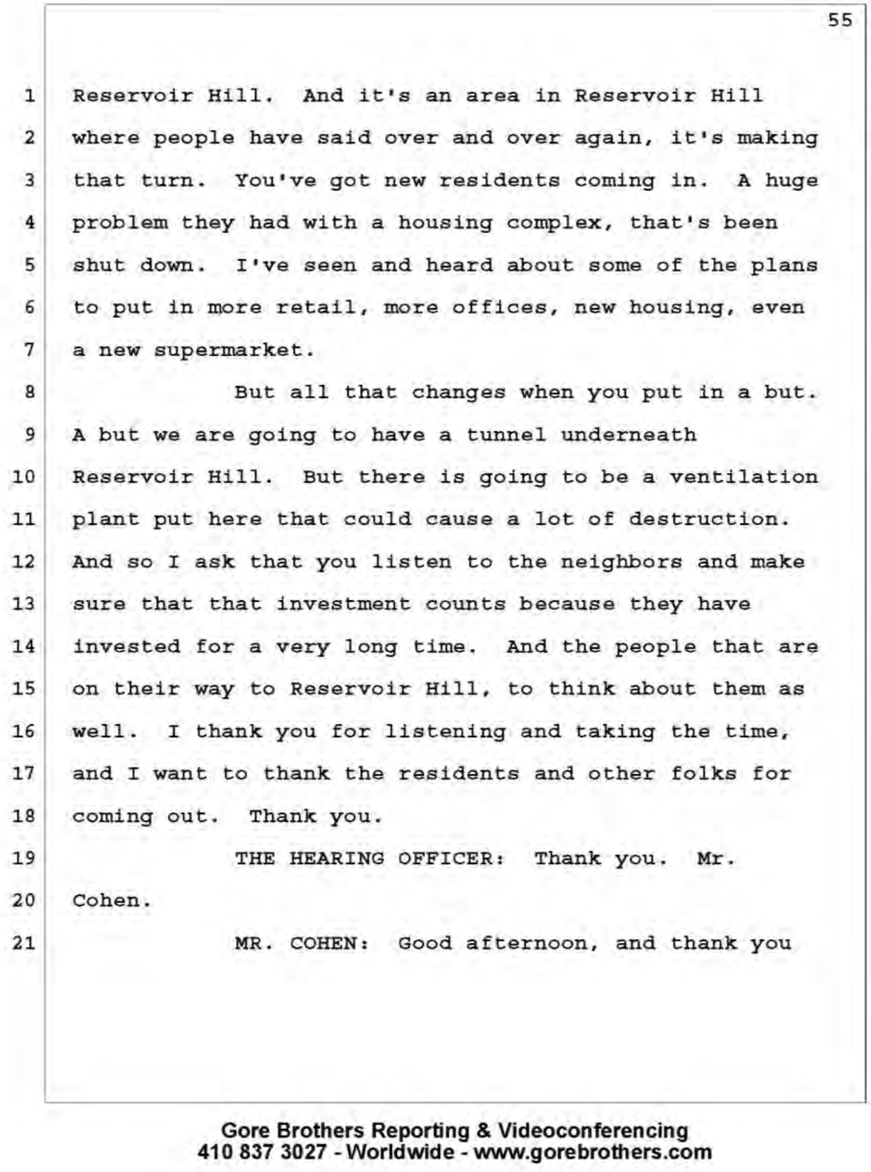


Reservoir Hill. And it's an area in Reservoir Hill where people have said over and over again, it's making that turn. You've got new residents coming in. A huge problem they had with a housing complex, that's been shut down. I've seen and heard about some of the plans to put in more retail, more offices, new housing, even a new supermarket.

3 But all that changes when you put in a but. A but we are going to have a tunnel underneath Reservoir Hill. But there is going to be a ventilation plant put here that could cause a lot of destruction. And so I ask that you listen to the neighbors and make sure that that investment counts because they have invested for a very long time. And the people that are on their way to Reservoir Hill, to think about them as well. I thank you for listening and taking the time, and I want to thank the residents and other folks for coming out. Thank you.

THE HEARING OFFICER: Thank you. Mr. Cohen.

MR. COHEN: Good afternoon, and thank you

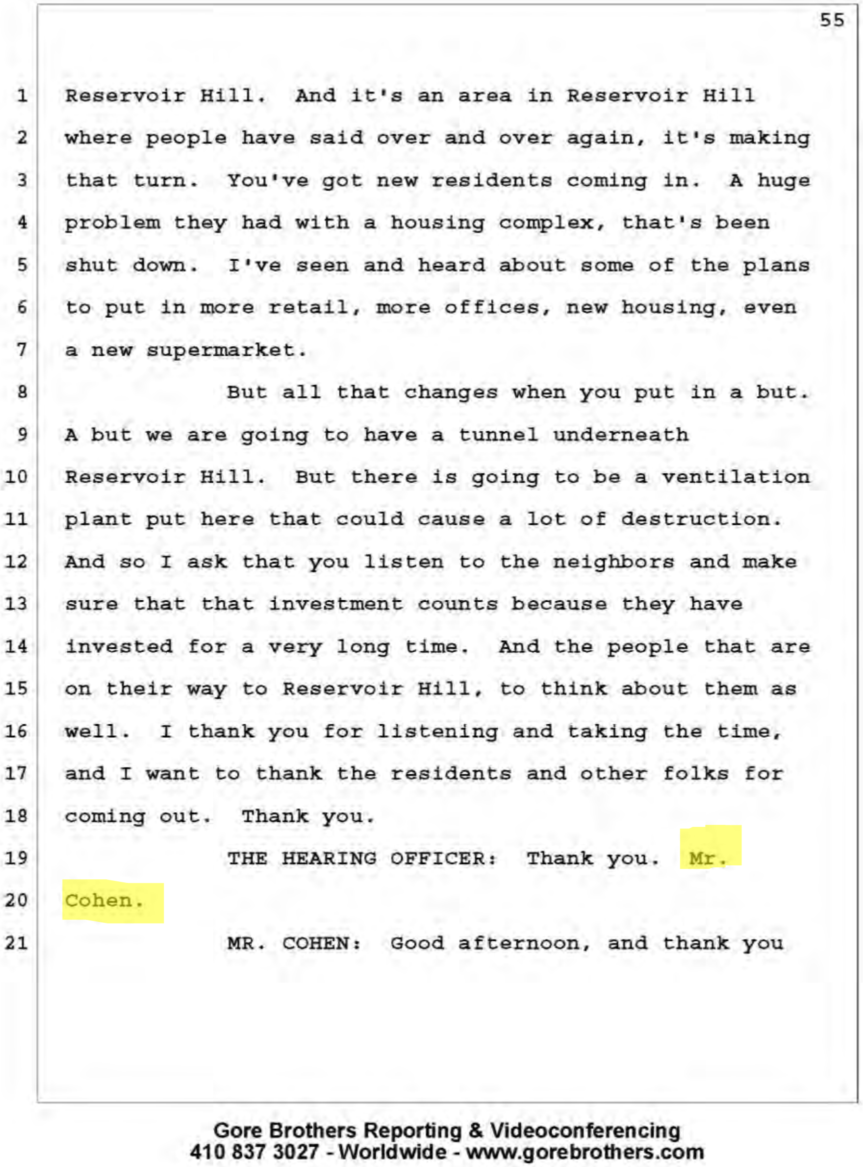
RESPONSES

Response to Comment 3:
The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS

RESPONSES

DEIS Comment 134:



Reservoir Hill. And it's an area in Reservoir Hill where people have said over and over again, it's making that turn. You've got new residents coming in. A huge problem they had with a housing complex, that's been shut down. I've seen and heard about some of the plans to put in more retail, more offices, new housing, even a new supermarket.

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THE HEARING OFFICER: Thank you. Mr. Cohen.

MR. COHEN: Good afternoon, and thank you

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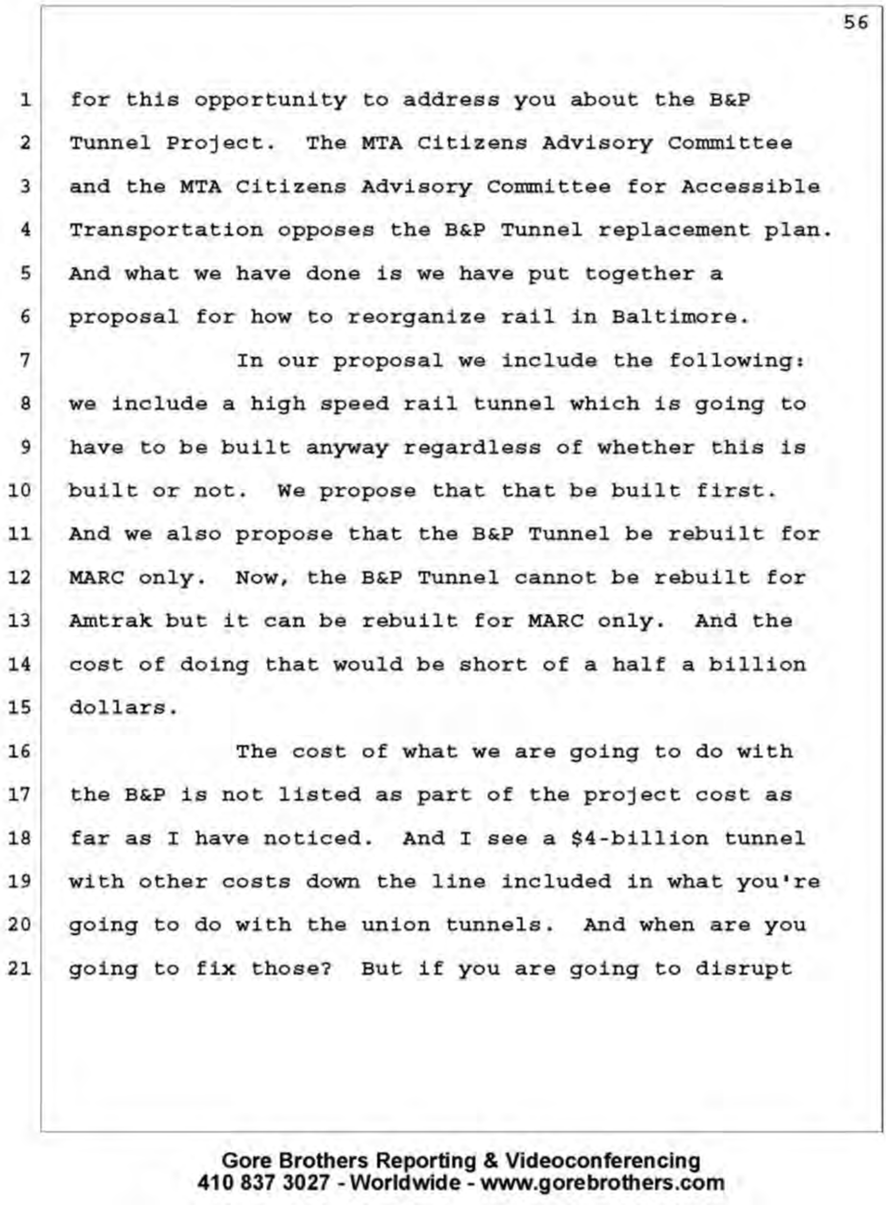


for this opportunity to address you about the B&P Tunnel Project. The MTA Citizens Advisory Committee and the MTA Citizens Advisory Committee for Accessible Transportation opposes the B&P Tunnel replacement plan. And what we have done is we have put together a proposal for how to reorganize rail in Baltimore.

1 In our proposal we include the following: we include a high speed rail tunnel which is going to have to be built anyway regardless of whether this is built or not. We propose that that be built first. And we also propose that the B&P Tunnel be rebuilt for MARC only. Now, the B&P Tunnel cannot be rebuilt for Amtrak but it can be rebuilt for MARC only. And the cost of doing that would be short of a half a billion dollars.

The cost of what we are going to do with the B&P is not listed as part of the project cost as far as I have noticed. And I see a $4-billion tunnel with other costs down the line included in what you're going to do with the union tunnels. And when are you going to fix those? But if you are going to disrupt

RESPONSES

Response to Comment 1:
It is beyond the scope of this study to consider alignments outside the NEC. This project evaluated replacement or re-use of the existing B&P Tunnel. The current Preferred Alternative would not re-purpose the existing tunnel; however, Amtrak desires to reserve the existing tunnel for a future rail transportation use.

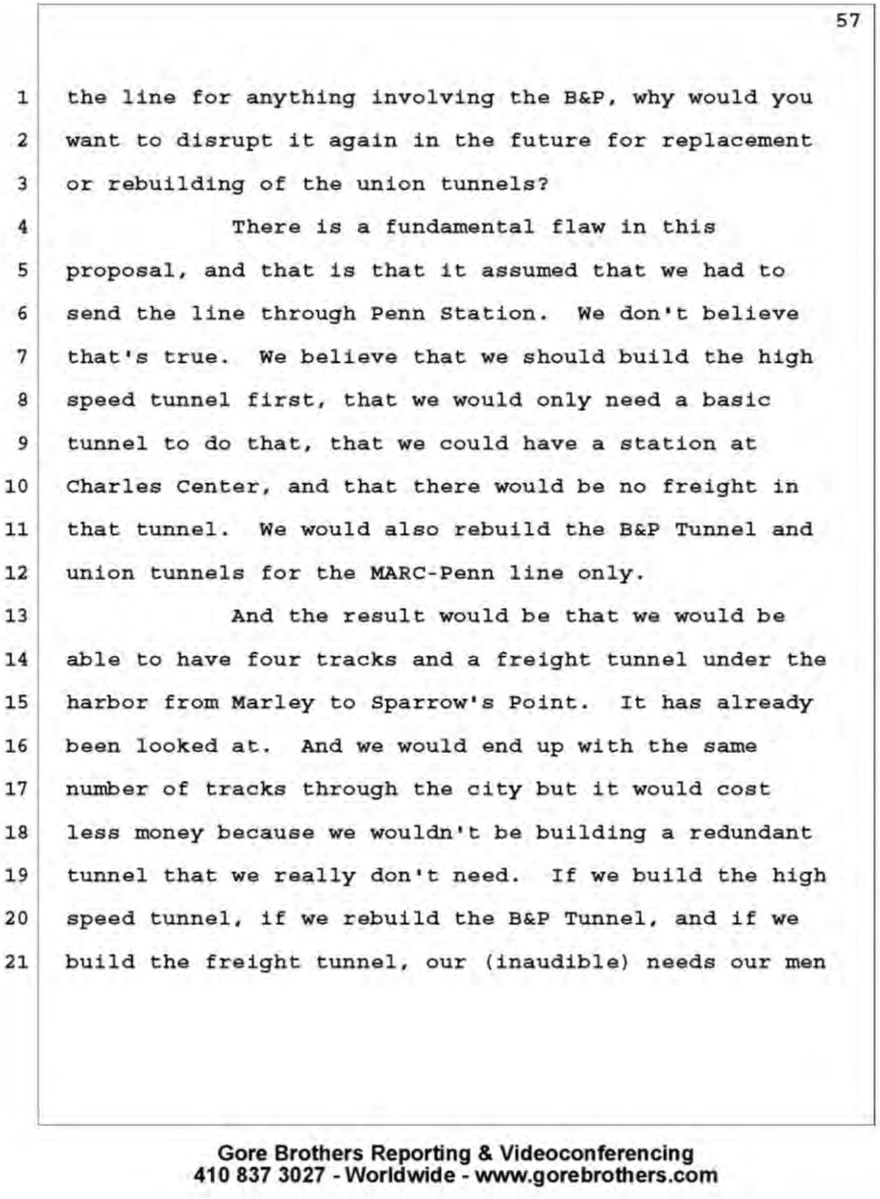
The B&P Tunnel Project proposes four tracks, which will be designed to accommodate Amtrak, MARC, and existing freight traffic. Additional improvements would be required to increase the amount of freight going through the tunnel.

Additionally, the report provided, *A Proposal to Unravel Baltimore's Tangled Rail Lines*, argues for a comprehensive system approach to rail planning in Baltimore and the mid-Atlantic region. It describes a list of projects and the order in which they should be completed. The report takes into consideration local, state, and regional transportation routes, and recommends new construction at a number of locations in order to relieve congestion and create opportunities for expanding rail service in the future.

While recommendations in the report focus on resolving issues at a regional level, they would not address or resolve the specific needs of the B&P Tunnel; therefore, the improvements suggested in the report would be beyond the purview of the Project. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life. It is considered to be structurally deficient due to its age, the original design, and wear and tear. The Tunnel is also functionally obsolete and unable to meet current and future rail demands. For additional information regarding the purpose and need of the Project, please see **Chapter II** of this FEIS.

To review the September 2015 report in its entirety, please refer to **DEIS Comment #11**.

COMMENTS



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the line for anything involving the B&P, why would you want to disrupt it again in the future for replacement or rebuilding of the union tunnels?

2 There is a fundamental flaw in this proposal, and that is that it assumed that we had to send the line through Penn Station. We don't believe that's true. We believe that we should build the high speed tunnel first, that we would only need a basic tunnel to do that, that we could have a station at Charles Center, and that there would be no freight in that tunnel. We would also rebuild the B&P Tunnel and union tunnels for the MARC-Penn line only.

And the result would be that we would be able to have four tracks and a freight tunnel under the harbor from Marley to Sparrow's Point. It has already been looked at. And we would end up with the same number of tracks through the city but it would cost less money because we wouldn't be building a redundant tunnel that we really don't need. If we build the high speed tunnel, if we rebuild the B&P Tunnel, and if we build the freight tunnel, our (inaudible) needs our men

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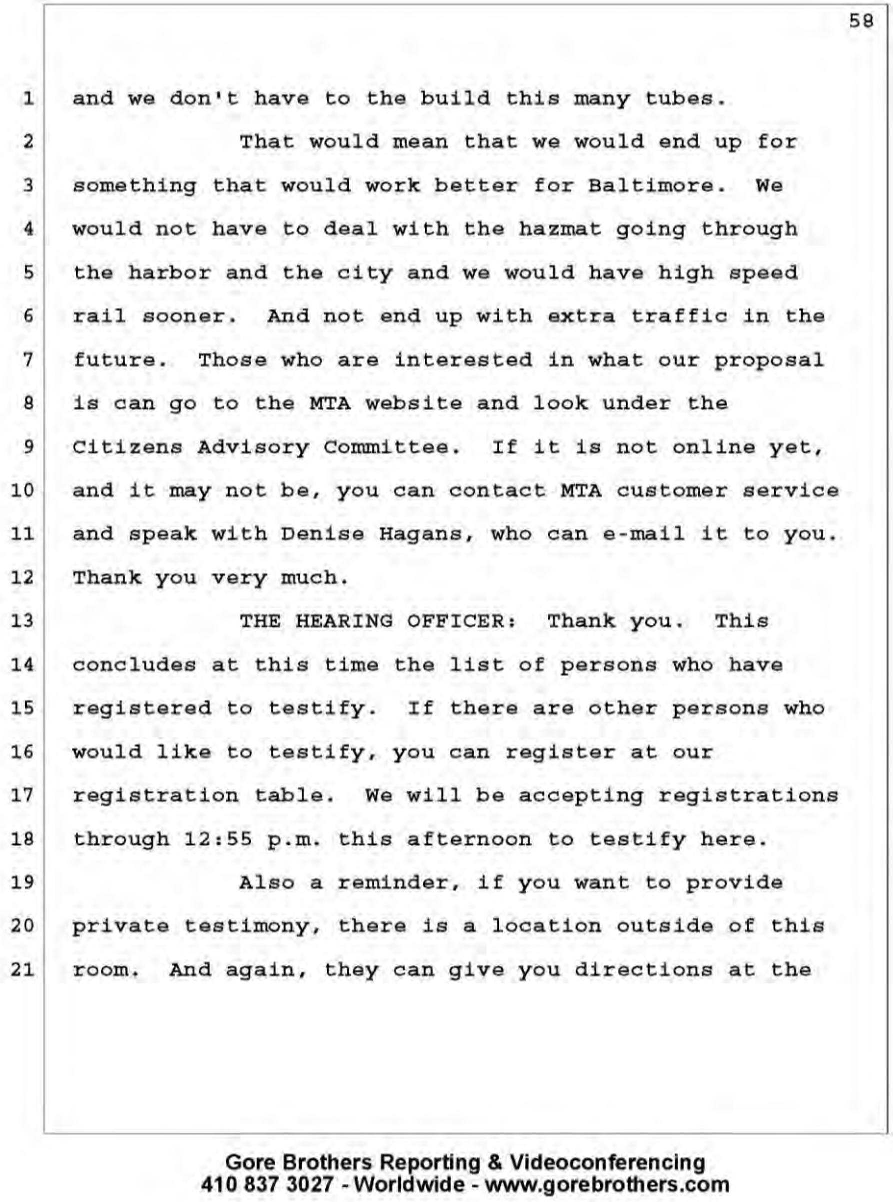
RESPONSES

Response to Comment 2:
An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Please see **Chapter III** of the FEIS*,* which details the basis of elimination or retention for each alternative.

COMMENTS

RESPONSES



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and we don't have to the build this many tubes.

That would mean that we would end up for something that would work better for Baltimore. We would not have to deal with the hazmat going through the harbor and the city and we would have high speed rail sooner. And not end up with extra traffic in the future. Those who are interested in what our proposal is can go to the MTA website and look under the Citizens Advisory Committee. If it is not online yet, and it may not be, you can contact MTA customer service and speak with Denise Hagans, who can e-mail it to you. Thank you very much.

THE HEARING OFFICER: Thank you. This concludes at this time the list of persons who have registered to testify. If there are other persons who would like to testify, you can register at our registration table. We will be accepting registrations through 12:55 p.m. this afternoon to testify here.

Also a reminder, if you want to provide private testimony, there is a location outside of this room. And again, they can give you directions at the

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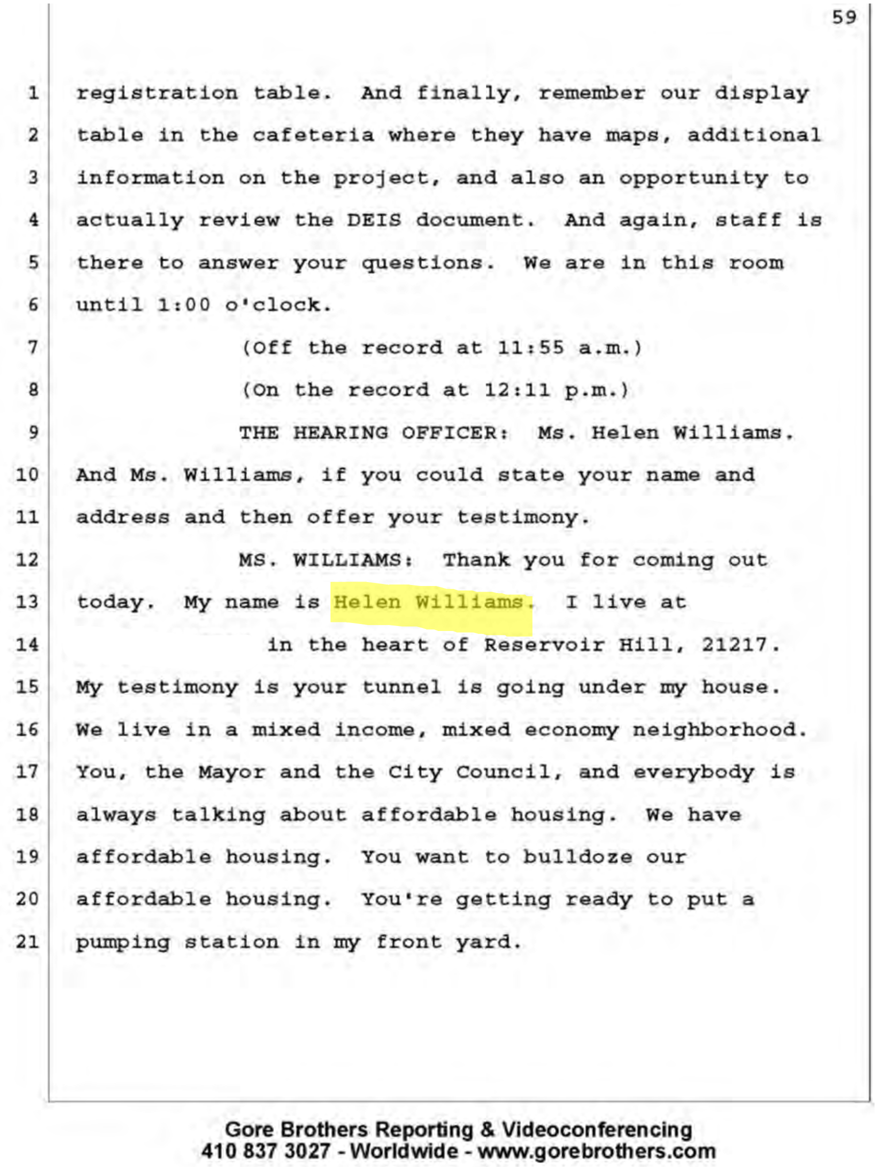
COMMENTS

DEIS Comment 135:



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registration table. And finally, remember our display table in the cafeteria where they have maps, additional information on the project, and also an opportunity to actually review the DEIS document. And again, staff is there to answer your questions. We are in this room until 1:00 o'clock.

(Off the record at 11:55 a.m.)

(On the record at 12:11 p.m.)

THE HEARING OFFICER: Ms. Helen Williams. And Ms. Williams, if you could state your name and address and then offer your testimony.

MS. WILLIAMS: Thank you for coming out today. My name is Helen Williams. I live at in the heart of Reservoir Hill, 21217. My testimony is your tunnel is going under my house. We live in a mixed income, mixed economy neighborhood. You, the Mayor and the City Council, and everybody is always talking about affordable housing. We have affordable housing. You want to bulldoze our affordable housing. You're getting ready to put a pumping station in my front yard. 1

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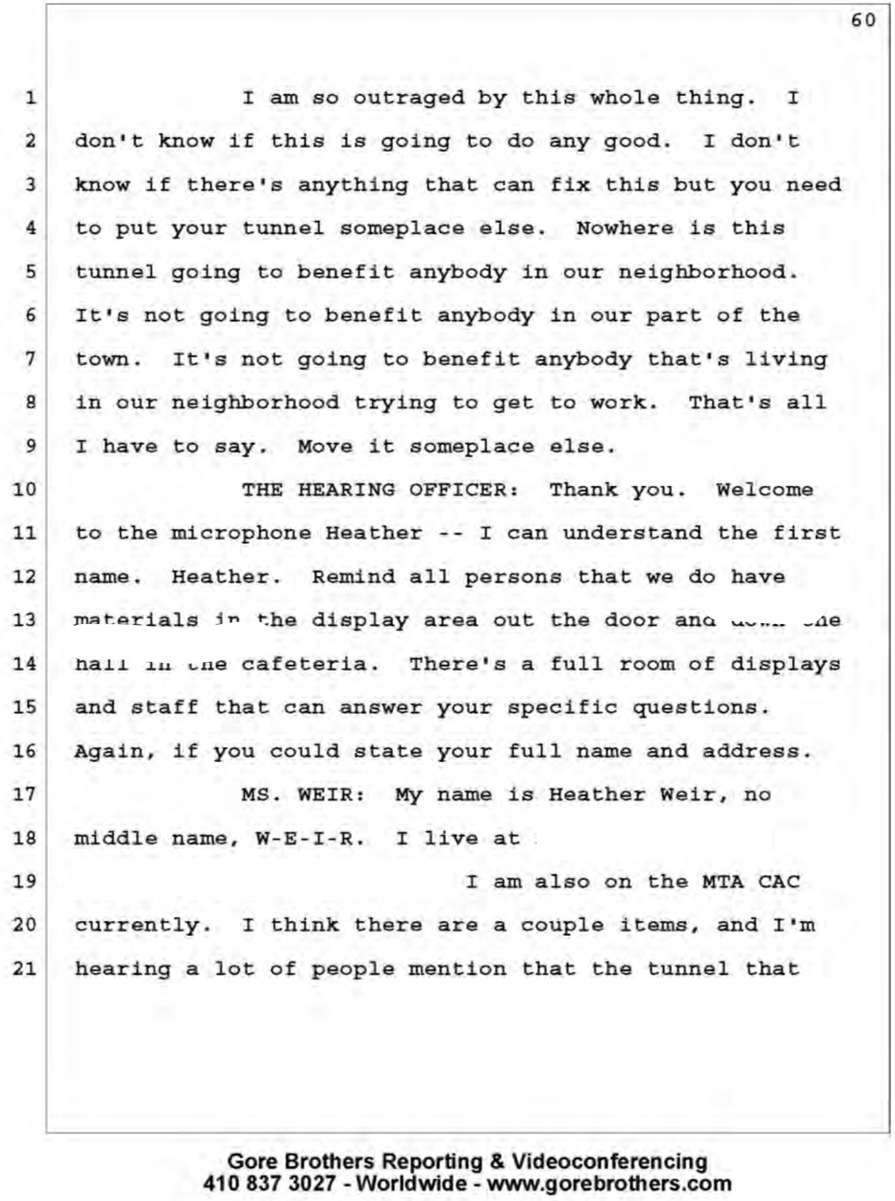
RESPONSES

Response to Comment 1:

The Preferred Alternative would displace 22 residential buildings in the Midtown-Edmondson neighborhood, Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings. Executive Order 12898 requires federal agencies to ensure effective, meaningful involvement of low-income and minority populations in project planning and development, and potentially affected EJ populations have fair and equal access to information. The Project Team has engaged in extensive public outreach throughout the development of the Project, including three public open houses and ten community meetings. In addition to these meetings, Mitigation Working Groups comprised of community organization representatives and members of the Project Team were established to determine the most effective mitigation for the Project. Details of this outreach are described in **Chapter VI** and **Chapter VIII**.

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS



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2 I am so outraged by this whole thing. I don't know if this is going to do any good. I don't know if there's anything that can fix this but you need to put your tunnel someplace else. Nowhere is this tunnel going to benefit anybody in our neighborhood. It's not going to benefit anybody in our part of the town. It's not going to benefit anybody that's living in our neighborhood trying to get to work. That's all I have to say. Move it someplace else.

THE HEARING OFFICER: Thank you. Welcome to the microphone Heather -- I can understand the first name. Heather. Remind all persons that we do have materials in the display area out the door and down the hall in the cafeteria. There's a full room of displays and staff that can answer your specific questions. Again, if you could state your full name and address.

MS. WEIR: My name is Heather Weir, no middle name, W-E-I-R. I live at I am also on the MTA CAC currently. I think there are a couple items, and I'm hearing a lot of people mention that the tunnel that

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RESPONSES

Response to Comment 2:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

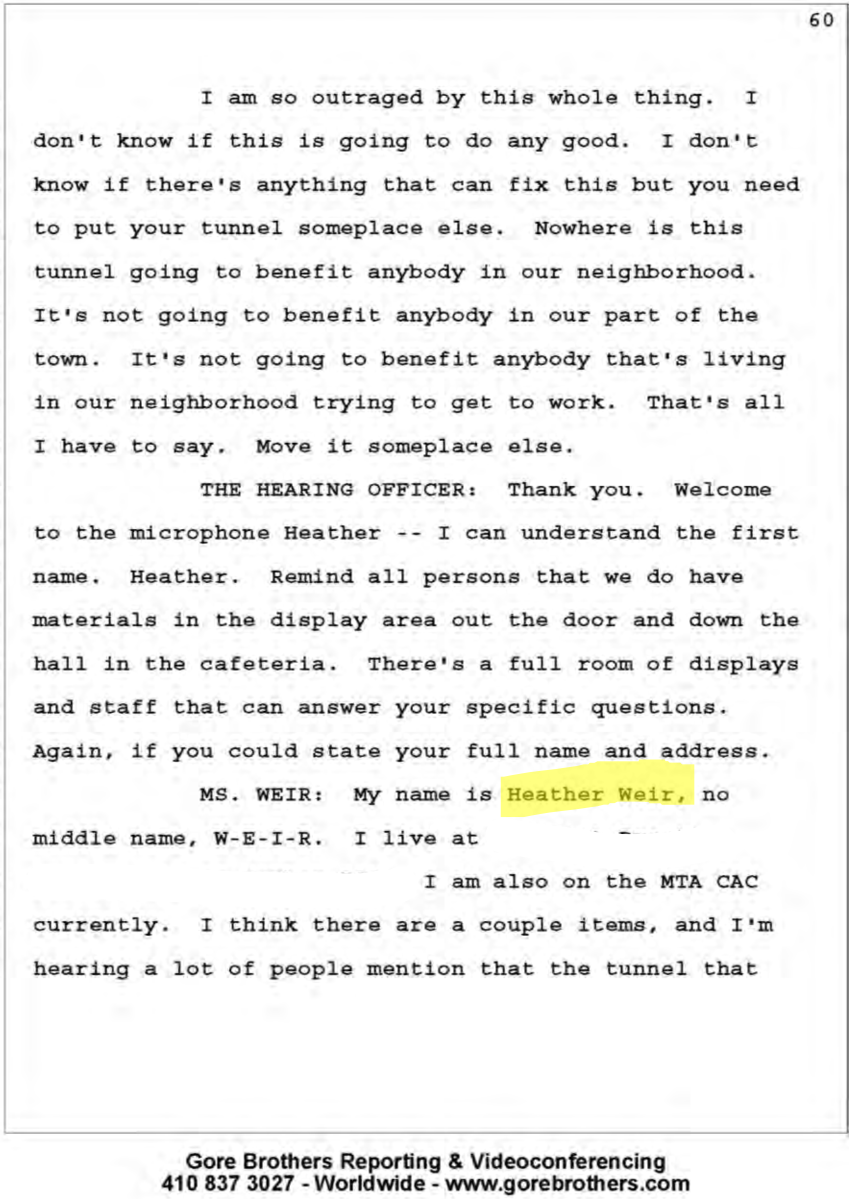
Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Since the publication of the DEIS, Alternative 3B was selected as the Preferred Alternative. Alternative 3B was advanced through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the selection of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

RESPONSES

DEIS Comment 136:



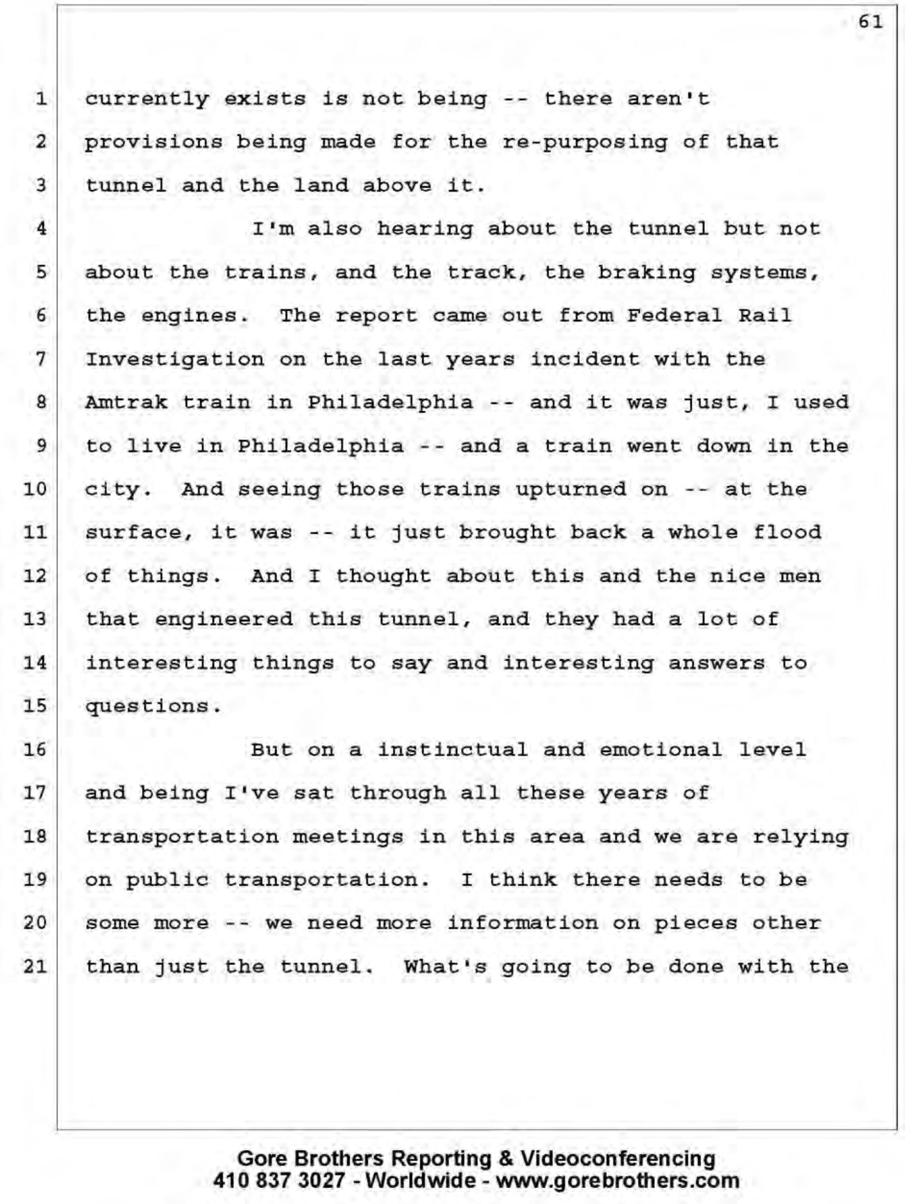
I am so outraged by this whole thing. I don't know if this is going to do any good. I don't know if there's anything that can fix this but you need to put your tunnel someplace else. Nowhere is this tunnel going to benefit anybody in our neighborhood. It's not going to benefit anybody in our part of the town. It's not going to benefit anybody that's living in our neighborhood trying to get to work. That's all I have to say. Move it someplace else.

THE HEARING OFFICER: Thank you. Welcome to the microphone Heather -- I can understand the first name. Heather. Remind all persons that we do have materials in the display area out the door and down the hall in the cafeteria. There's a full room of displays and staff that can answer your specific questions. Again, if you could state your full name and address.

MS. WEIR: My name is Heather Weir, no middle name, W-E-I-R. I live at

I am also on the MTA CAC currently. I think there are a couple items, and I'm hearing a lot of people mention that the tunnel that

COMMENTS



61

1 currently exists is not being -- there aren't provisions being made for the re-purposing of that tunnel and the land above it.

2 I'm also hearing about the tunnel but not about the trains, and the track, the braking systems, the engines. The report came out from Federal Rail Investigation on the last years incident with the Amtrak train in Philadelphia -- and it was just, I used to live in Philadelphia -- and a train went down in the city. And seeing those trains upturned on -- at the surface, it was -- it just brought back a whole flood of things. And I thought about this and the nice men that engineered this tunnel, and they had a lot of interesting things to say and interesting answers to questions.

But on a instinctual and emotional level and being I've sat through all these years of transportation meetings in this area and we are relying on public transportation. I think there needs to be some more -- we need more information on pieces other than just the tunnel. What's going to be done with the

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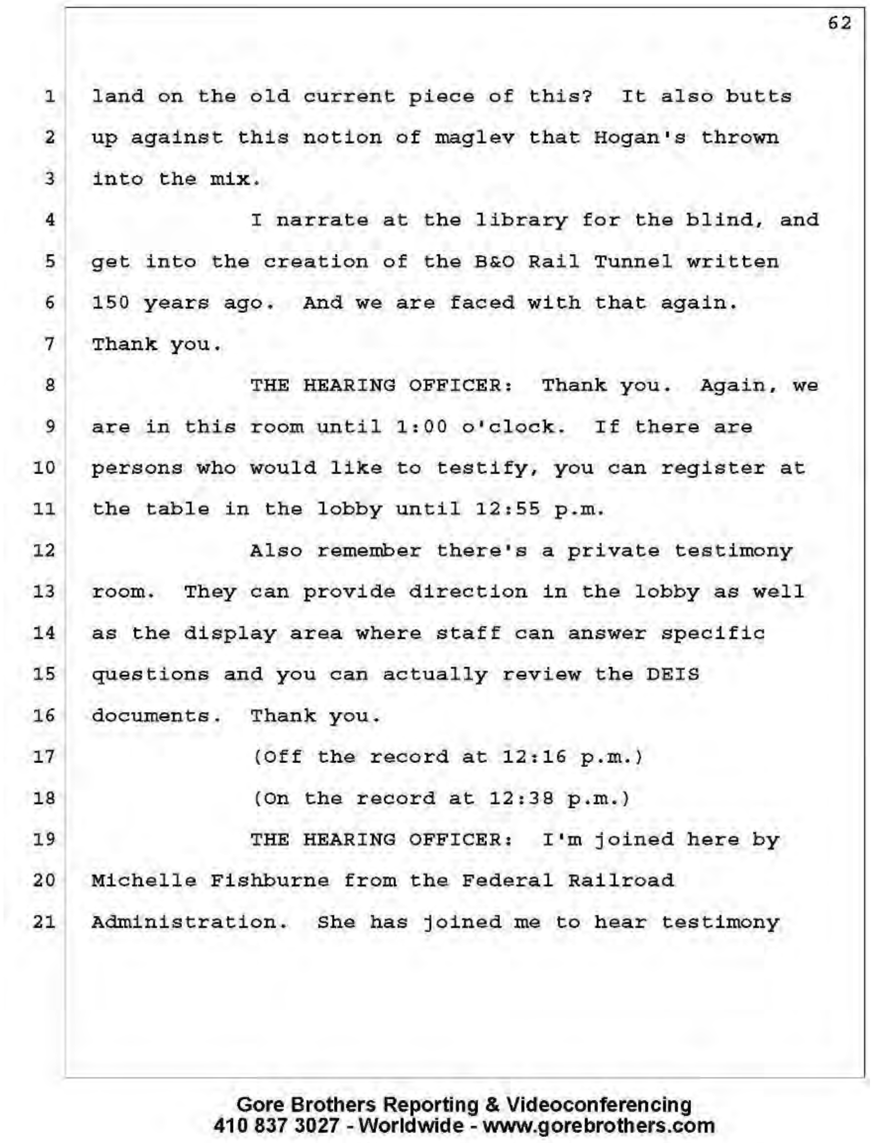
RESPONSES

Response to Comment 1:
Amtrak desires to reserve the existing tunnel for a future rail transportation use.

Response to Comment 2:
New tunnels would be designed to optimize safety and meet modern standards. Amtrak and Norfolk Southern (NS) are anticipated to use existing fleets and newly-acquired equipment in the B&P Tunnel and the equipment must meet federal standards for safe operations. In addition, the B&P Tunnel would be equipped with Automatic Train Control (ATC) and Positive Train Control (PTC) systems, which use computer systems to control the speed of both passenger and freight trains within the tunnel.

COMMENTS



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land on the old current piece of this? It also butts up against this notion of maglev that Hogan's thrown into the mix. 3

I narrate at the library for the blind, and get into the creation of the B&O Rail Tunnel written 150 years ago. And we are faced with that again. Thank you.

THE HEARING OFFICER: Thank you. Again, we are in this room until 1:00 o'clock. If there are persons who would like to testify, you can register at the table in the lobby until 12:55 p.m.

Also remember there's a private testimony room. They can provide direction in the lobby as well as the display area where staff can answer specific questions and you can actually review the DEIS documents. Thank you.

(Off the record at 12:16 p.m.)

(On the record at 12:38 p.m.)

THE HEARING OFFICER: I'm joined here by Michelle Fishburne from the Federal Railroad Administration. She has joined me to hear testimony

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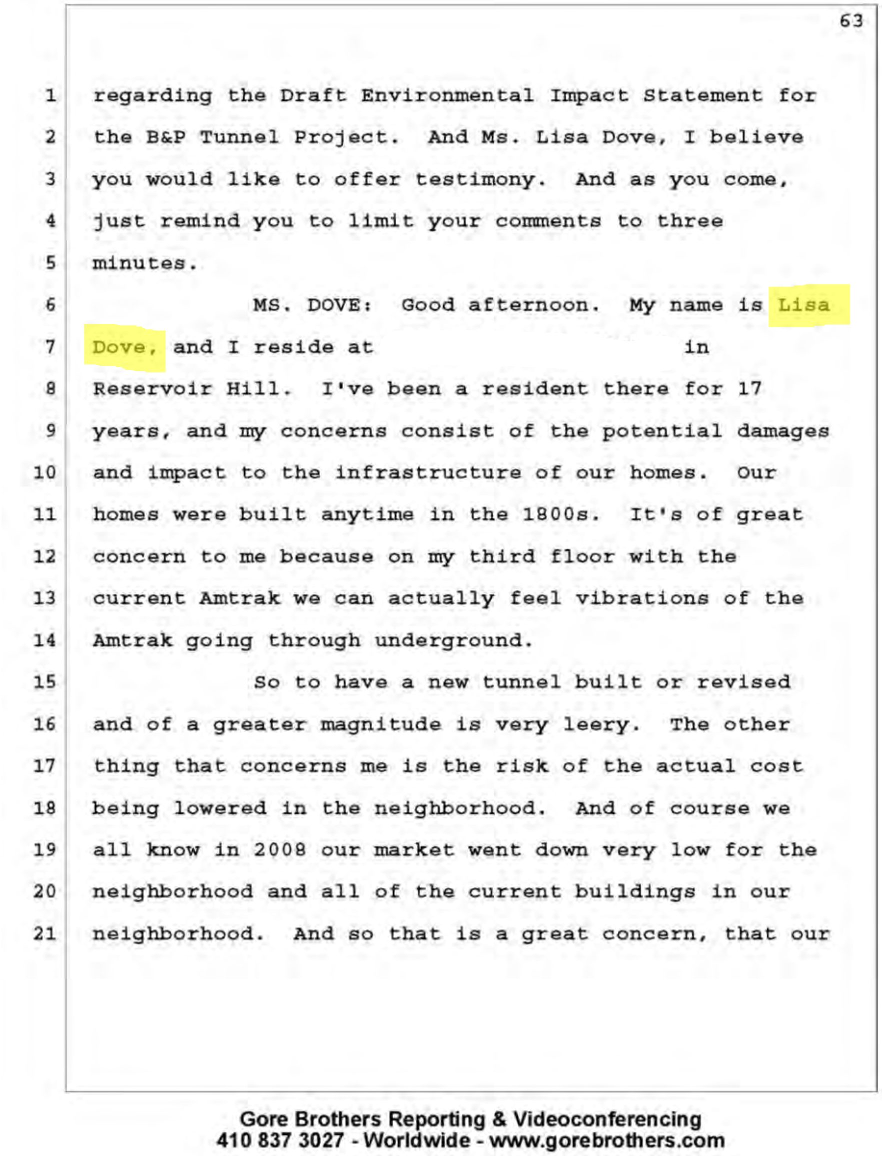
RESPONSES

Response to Comment 3:
A Maglev train would not utilize existing or planned Amtrak infrastructure. The design of such a system requires significantly different rights-of-way and infrastructure. The design criteria for Maglev are extremely restrictive and would only be achievable on new alignments.

COMMENTS

DEIS Comment 137:



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regarding the Draft Environmental Impact Statement for
the B&P Tunnel Project. And Ms. Lisa Dove, I believe
you would like to offer testimony. And as you come,
just remind you to limit your comments to three
minutes.

MS. DOVE: Good afternoon. My name is Lisa
Dove, and I reside at in
Reservoir Hill. I've been a resident there for 17
years, and my concerns consist of the potential damages
and impact to the infrastructure of our homes. Our
1 homes were built anytime in the 1800s. It's of great
concern to me because on my third floor with the
current Amtrak we can actually feel vibrations of the
Amtrak going through underground.

So to have a new tunnel built or revised
and of a greater magnitude is very leery. The other
thing that concerns me is the risk of the actual cost
being lowered in the neighborhood. And of course we
2 all know in 2008 our market went down very low for the
neighborhood and all of the current buildings in our
neighborhood. And so that is a great concern, that our

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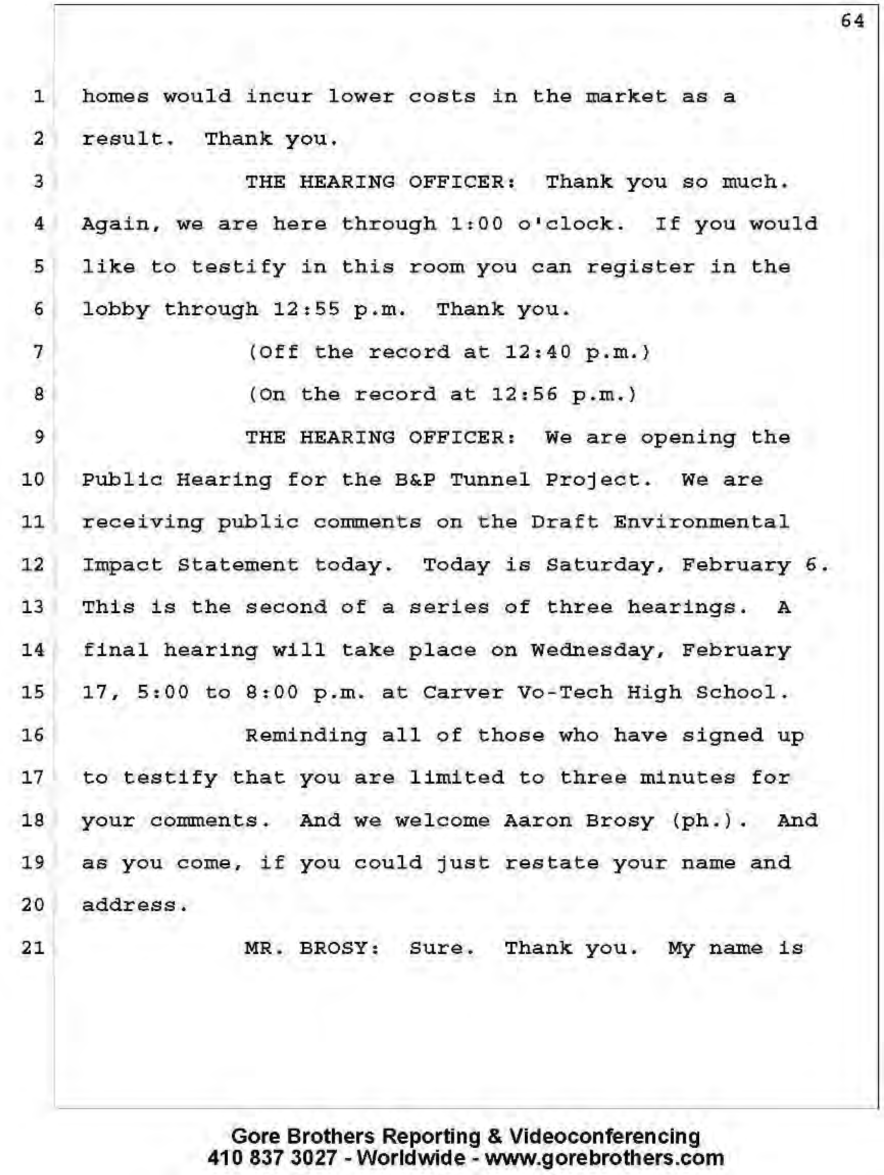
RESPONSES

Response to Comment 1:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

Response to Comment 2:
The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS

RESPONSES



homes would incur lower costs in the market as a result. Thank you.

THE HEARING OFFICER: Thank you so much. Again, we are here through 1:00 o'clock. If you would like to testify in this room you can register in the lobby through 12:55 p.m. Thank you.

(Off the record at 12:40 p.m.)

(On the record at 12:56 p.m.)

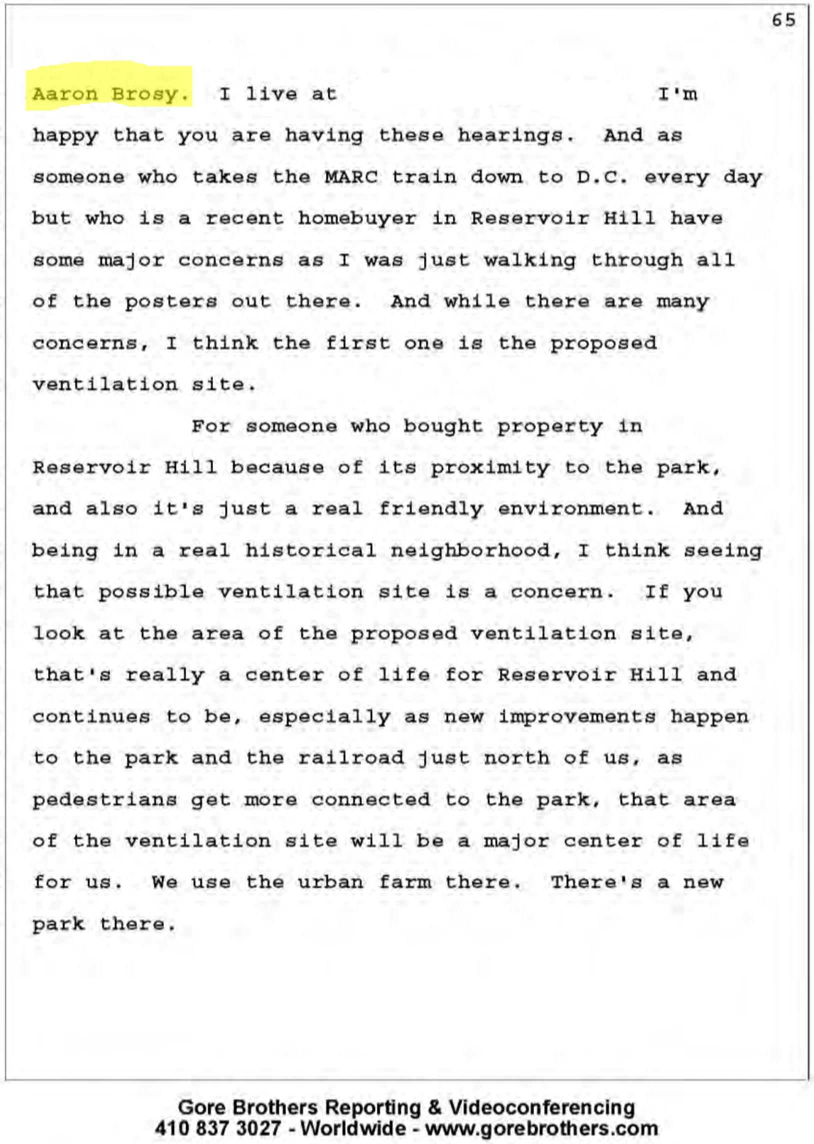
THE HEARING OFFICER: We are opening the Public Hearing for the B&P Tunnel Project. We are receiving public comments on the Draft Environmental Impact Statement today. Today is Saturday, February 6. This is the second of a series of three hearings. A final hearing will take place on Wednesday, February 17, 5:00 to 8:00 p.m. at Carver Vo-Tech High School.

Reminding all of those who have signed up to testify that you are limited to three minutes for your comments. And we welcome Aaron Brosy (ph.). And as you come, if you could just restate your name and address.

MR. BROSY: Sure. Thank you. My name is

COMMENTS

DEIS Comment 138:



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Aaron Brosy. I live at I'm happy that you are having these hearings. And as someone who takes the MARC train down to D.C. every day but who is a recent homebuyer in Reservoir Hill have some major concerns as I was just walking through all of the posters out there. And while there are many concerns, I think the first one is the proposed ventilation site.

1 For someone who bought property in Reservoir Hill because of its proximity to the park, and also it's just a real friendly environment. And being in a real historical neighborhood, I think seeing that possible ventilation site is a concern. If you look at the area of the proposed ventilation site, that's really a center of life for Reservoir Hill and continues to be, especially as new improvements happen to the park and the railroad just north of us, as pedestrians get more connected to the park, that area of the ventilation site will be a major center of life for us. We use the urban farm there. There's a new park there.

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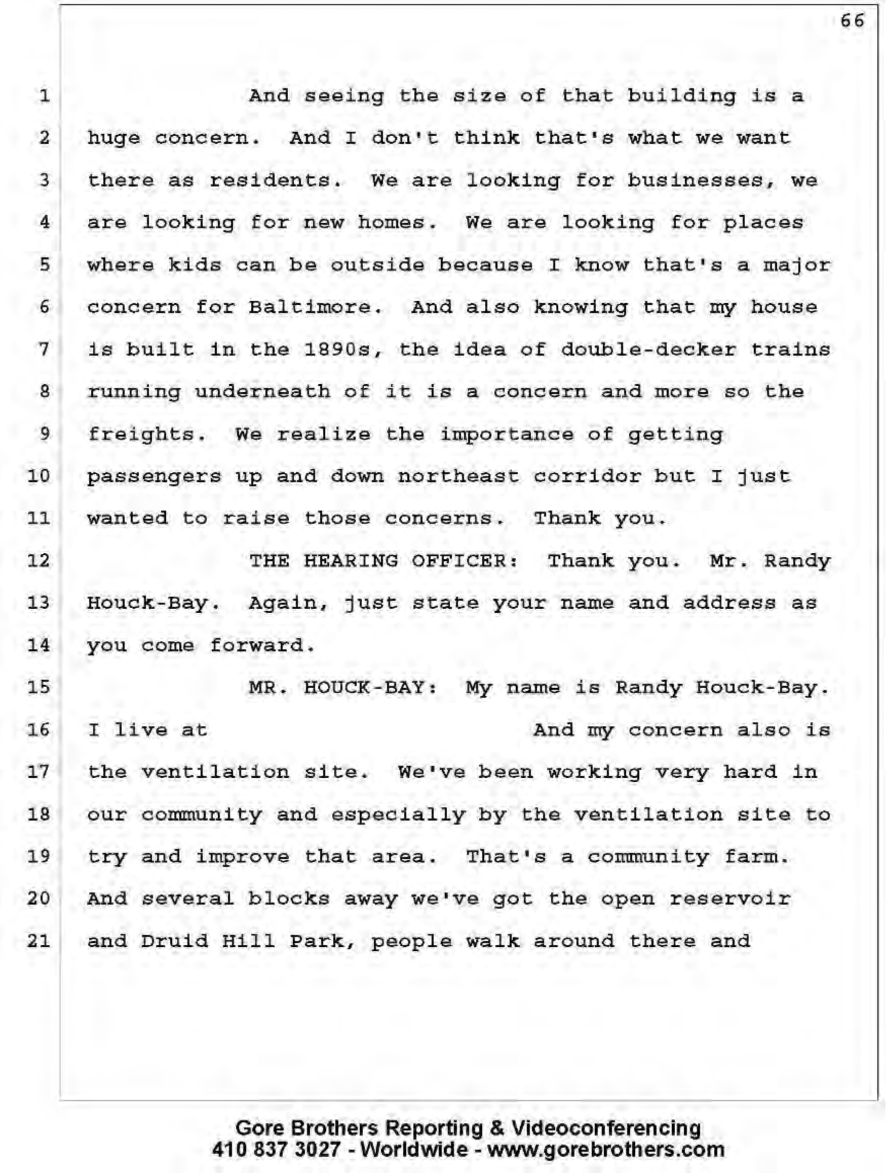
RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS



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And seeing the size of that building is a huge concern. And I don't think that's what we want there as residents. We are looking for businesses, we are looking for new homes. We are looking for places where kids can be outside because I know that's a major concern for Baltimore. 2 And also knowing that my house is built in the 1890s, the idea of double-decker trains running underneath of it is a concern and more so the 3 freights. We realize the importance of getting passengers up and down northeast corridor but I just wanted to raise those concerns. Thank you.

THE HEARING OFFICER: Thank you. Mr. Randy Houck-Bay. Again, just state your name and address as you come forward.

MR. HOUCK-BAY: My name is Randy Houck-Bay. I live at And my concern also is the ventilation site. We've been working very hard in our community and especially by the ventilation site to try and improve that area. That's a community farm. And several blocks away we've got the open reservoir and Druid Hill Park, people walk around there and

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RESPONSES

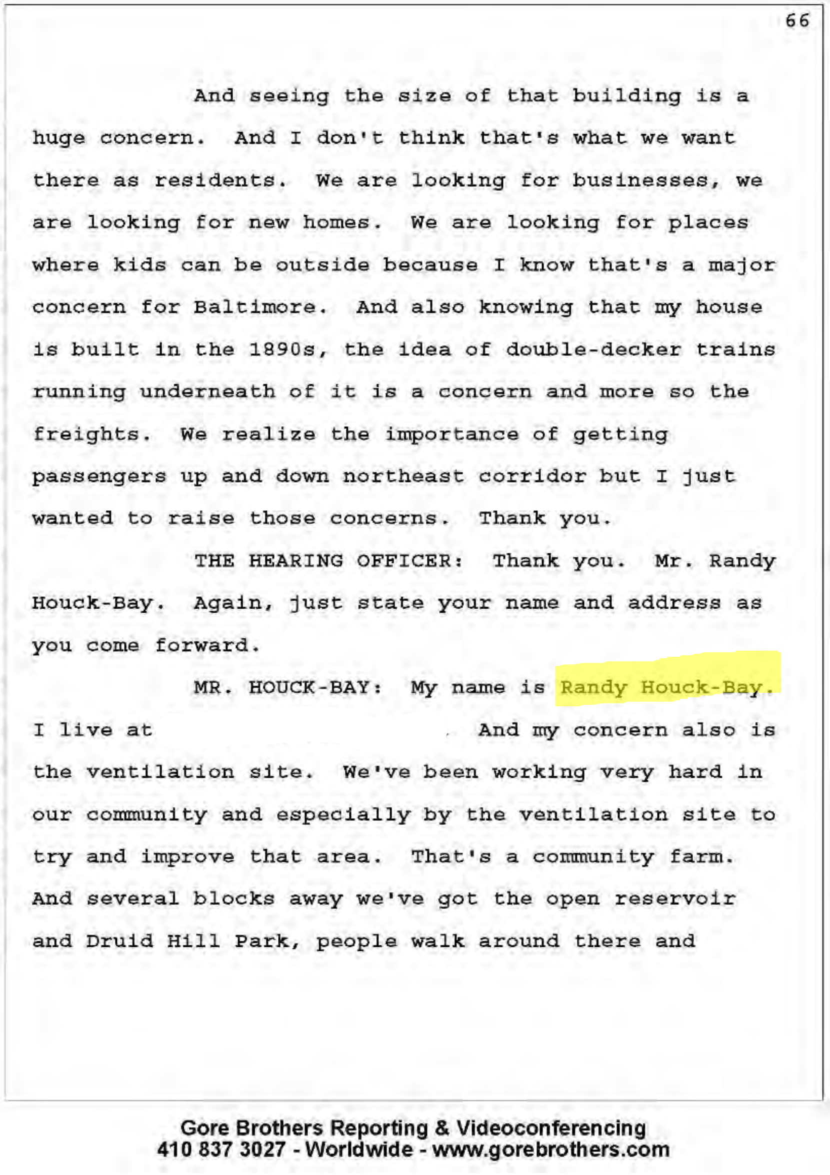
Response to Comment 2:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

Response to Comment 3:
Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes. Due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Amtrak's first priority is to its passenger services. Therefore, although Amtrak must accommodate requests from NS or other freight operators with trackage rights agreements for additional train moves on the NEC, Amtrak need only schedule such moves as space between passenger trains can be made available. Where the freight operator and Amtrak have a dispute about scheduling of freight moves, the Surface Transportation Board (STB) adjudicates trackage rights agreements.

COMMENTS

DEIS Comment 139:



And seeing the size of that building is a huge concern. And I don't think that's what we want there as residents. We are looking for businesses, we are looking for new homes. We are looking for places where kids can be outside because I know that's a major concern for Baltimore. And also knowing that my house is built in the 1890s, the idea of double-decker trains running underneath of it is a concern and more so the freights. We realize the importance of getting passengers up and down northeast corridor but I just wanted to raise those concerns. Thank you.

THE HEARING OFFICER: Thank you. Mr. Randy Houck-Bay. Again, just state your name and address as you come forward.

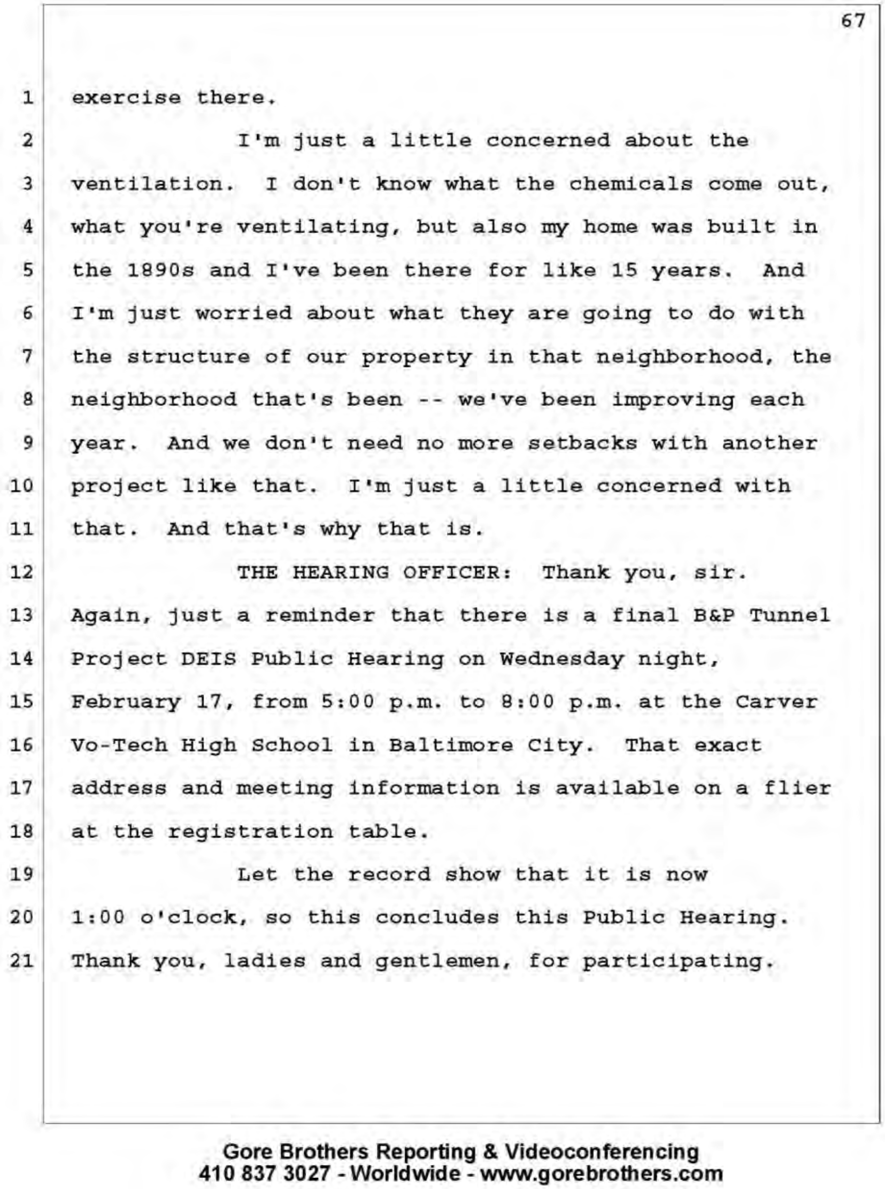
MR. HOUCK-BAY: My name is Randy Houck-Bay. I live at And my concern also is the ventilation site. We've been working very hard in our community and especially by the ventilation site to try and improve that area. That's a community farm. And several blocks away we've got the open reservoir and Druid Hill Park, people walk around there and

1

RESPONSES

Response to Comment 1:
The current preferred location of the Intermediate Ventilation Facility is 900-940 West The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS



exercise there.
I'm just a little concerned about the
2 ventilation. I don't know what the chemicals come out,
what you're ventilating, but also my home was built in
the 1890s and I've been there for like 15 years. And
I'm just worried about what they are going to do with
3 the structure of our property in that neighborhood, the
neighborhood that's been -- we've been improving each
year. And we don't need no more setbacks with another
project like that. I'm just a little concerned with
that. And that's why that is.

THE HEARING OFFICER: Thank you, sir. Again, just a reminder that there is a final B&P Tunnel Project DEIS Public Hearing on Wednesday night, February 17, from 5:00 p.m. to 8:00 p.m. at the Carver Vo-Tech High School in Baltimore City. That exact address and meeting information is available on a flier at the registration table.

Let the record show that it is now 1:00 o'clock, so this concludes this Public Hearing. Thank you, ladies and gentlemen, for participating.

RESPONSES

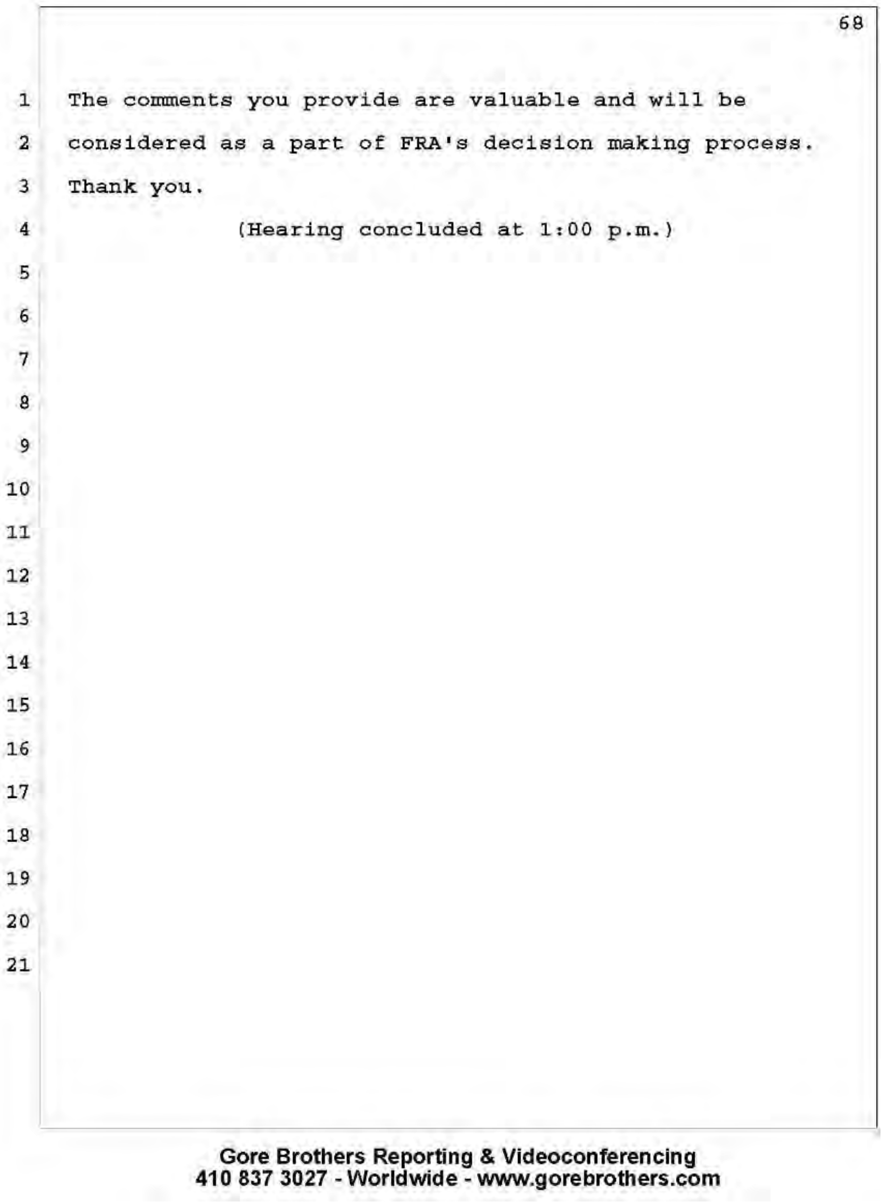
Response to Comment 2:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

Response to Comment 3:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

COMMENTS

RESPONSES



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The comments you provide are valuable and will be considered as a part of FRA's decision making process. Thank you.

(Hearing concluded at 1:00 p.m.)

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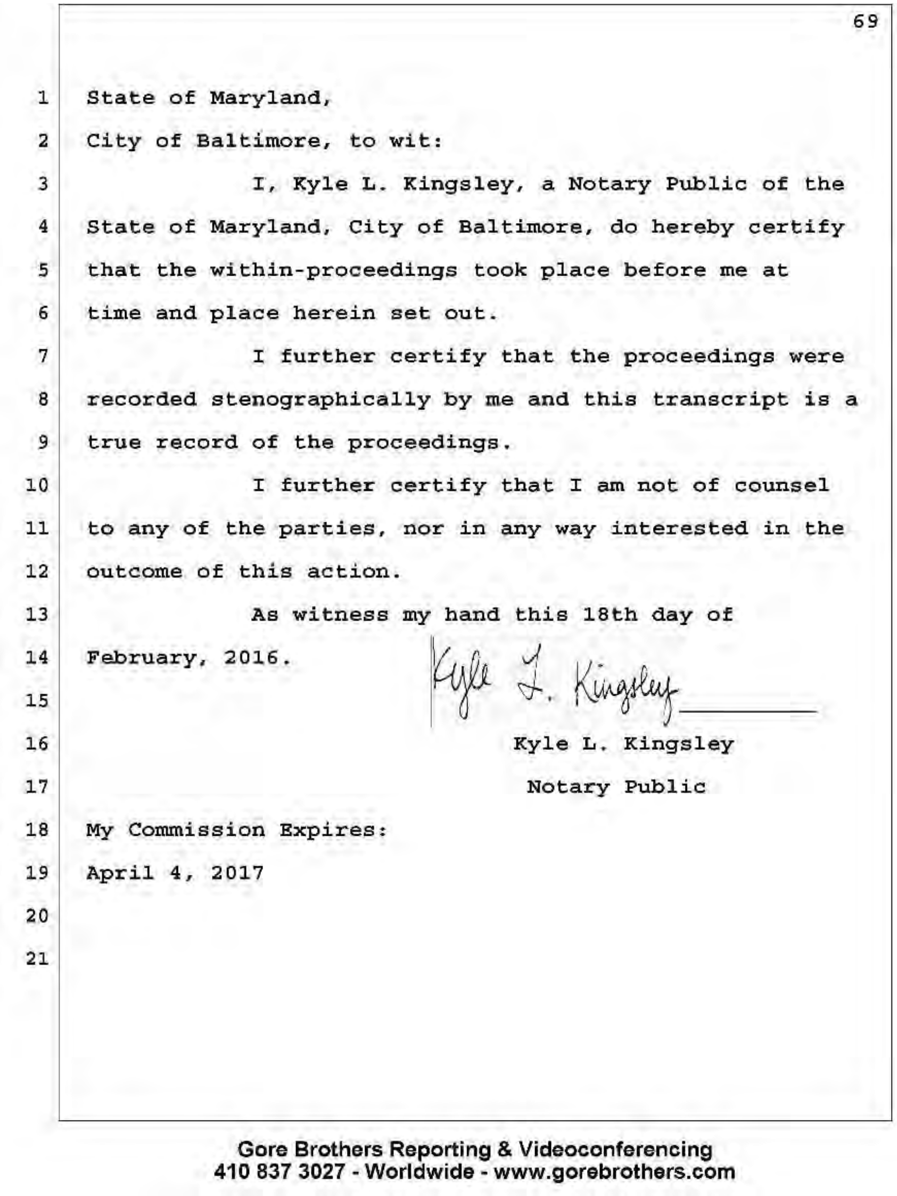
COMMENTS

RESPONSES



State of Maryland,
City of Baltimore, to wit:

I, Kyle L. Kingsley, a Notary Public of the State of Maryland, City of Baltimore, do hereby certify that the within-proceedings took place before me at time and place herein set out.

I further certify that the proceedings were recorded stenographically by me and this transcript is a true record of the proceedings.

I further certify that I am not of counsel to any of the parties, nor in any way interested in the outcome of this action.

As witness my hand this 18th day of February, 2016.

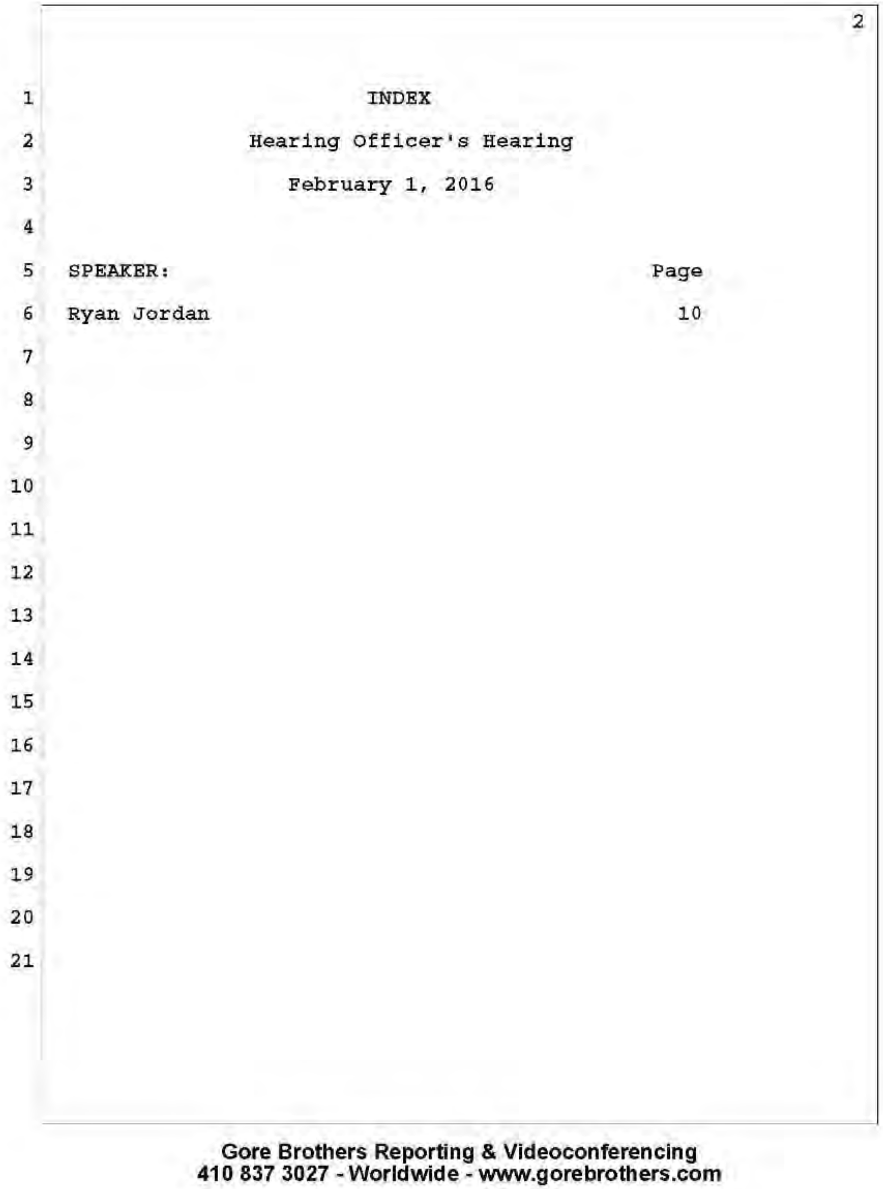
Kyle L. Kingsley

Kyle L. Kingsley
Notary Public

My Commission Expires:
April 4, 2017

COMMENTS

RESPONSES



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Hearing Officer's Hearing

February 1, 2016

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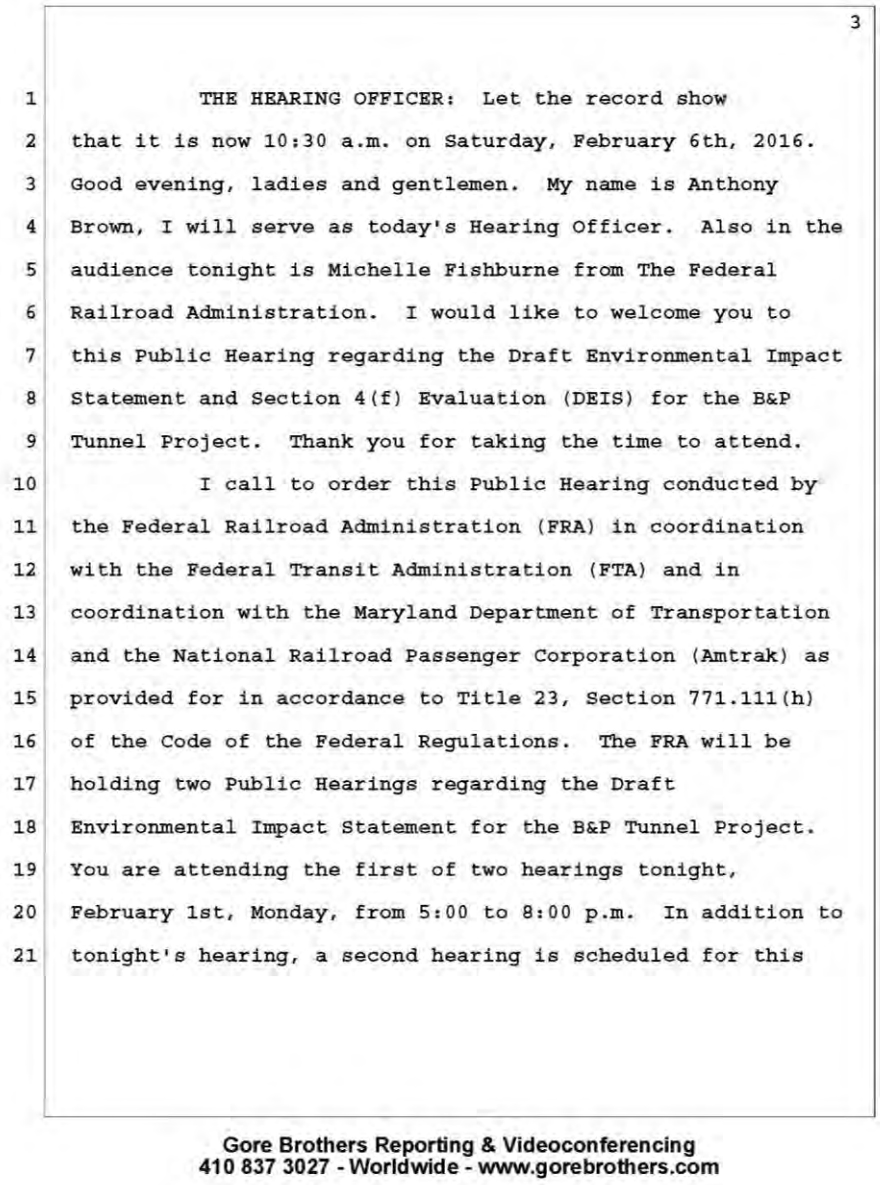
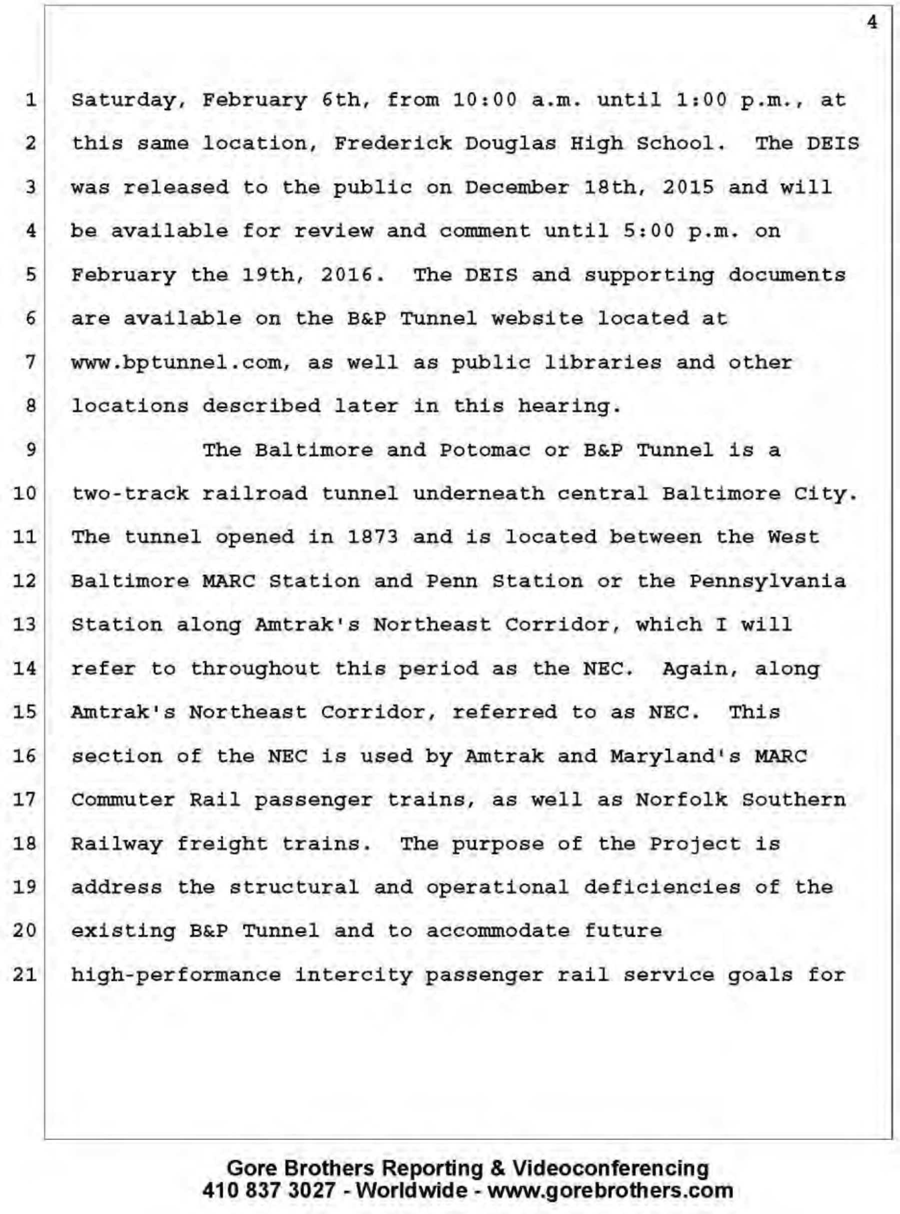


THE HEARING OFFICER: Let the record show that it is now 10:30 a.m. on Saturday, February 6th, 2016. Good evening, ladies and gentlemen. My name is Anthony Brown, I will serve as today's Hearing Officer. Also in the audience tonight is Michelle Fishburne from The Federal Railroad Administration. I would like to welcome you to this Public Hearing regarding the Draft Environmental Impact Statement and Section 4(f) Evaluation (DEIS) for the B&P Tunnel Project. Thank you for taking the time to attend.

I call to order this Public Hearing conducted by the Federal Railroad Administration (FRA) in coordination with the Federal Transit Administration (FTA) and in coordination with the Maryland Department of Transportation and the National Railroad Passenger Corporation (Amtrak) as provided for in accordance to Title 23, Section 771.111(h) of the Code of the Federal Regulations. The FRA will be holding two Public Hearings regarding the Draft Environmental Impact Statement for the B&P Tunnel Project. You are attending the first of two hearings tonight, February 1st, Monday, from 5:00 to 8:00 p.m. In addition to tonight's hearing, a second hearing is scheduled for this

COMMENTS

RESPONSES

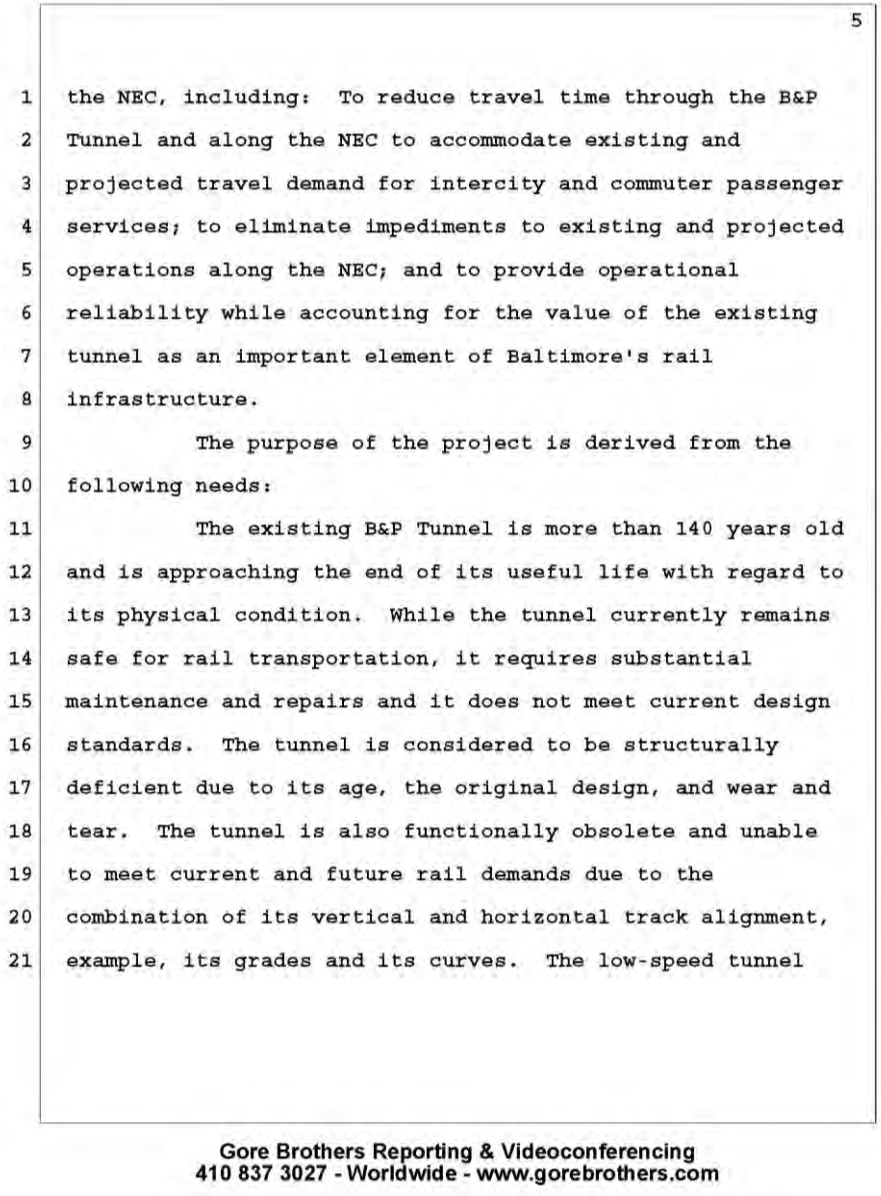


Saturday, February 6th, from 10:00 a.m. until 1:00 p.m., at this same location, Frederick Douglas High School. The DEIS was released to the public on December 18th, 2015 and will be available for review and comment until 5:00 p.m. on February the 19th, 2016. The DEIS and supporting documents are available on the B&P Tunnel website located at www.bptunnel.com, as well as public libraries and other locations described later in this hearing.

The Baltimore and Potomac or B&P Tunnel is a two-track railroad tunnel underneath central Baltimore City. The tunnel opened in 1873 and is located between the West Baltimore MARC Station and Penn Station or the Pennsylvania Station along Amtrak's Northeast Corridor, which I will refer to throughout this period as the NEC. Again, along Amtrak's Northeast Corridor, referred to as NEC. This section of the NEC is used by Amtrak and Maryland's MARC Commuter Rail passenger trains, as well as Norfolk Southern Railway freight trains. The purpose of the Project is address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for

COMMENTS

RESPONSES



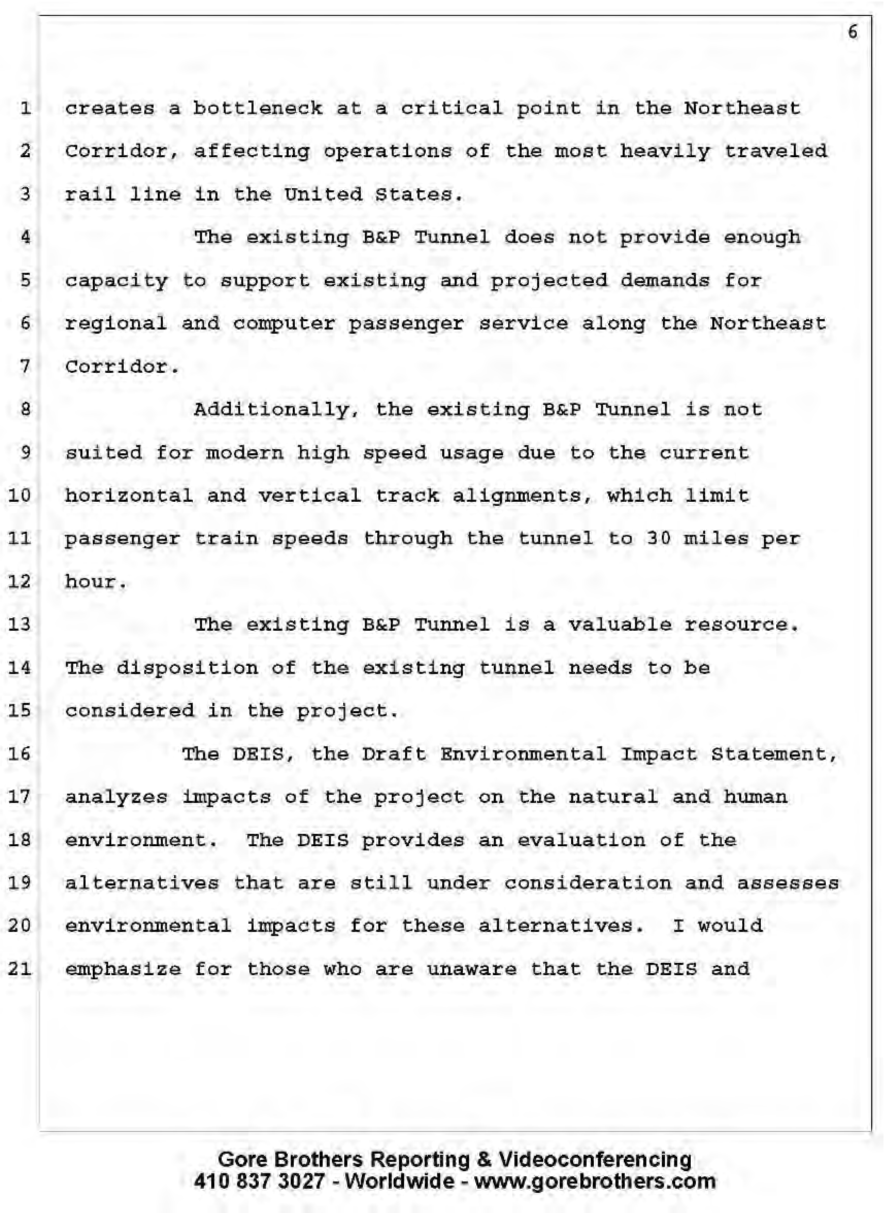
the NEC, including: To reduce travel time through the B&P Tunnel and along the NEC to accommodate existing and projected travel demand for intercity and commuter passenger services; to eliminate impediments to existing and projected operations along the NEC; and to provide operational reliability while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

The purpose of the project is derived from the following needs:

The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the tunnel currently remains safe for rail transportation, it requires substantial maintenance and repairs and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands due to the combination of its vertical and horizontal track alignment, example, its grades and its curves. The low-speed tunnel

COMMENTS

RESPONSES



creates a bottleneck at a critical point in the Northeast Corridor, affecting operations of the most heavily traveled rail line in the United States.

The existing B&P Tunnel does not provide enough capacity to support existing and projected demands for regional and computer passenger service along the Northeast Corridor.

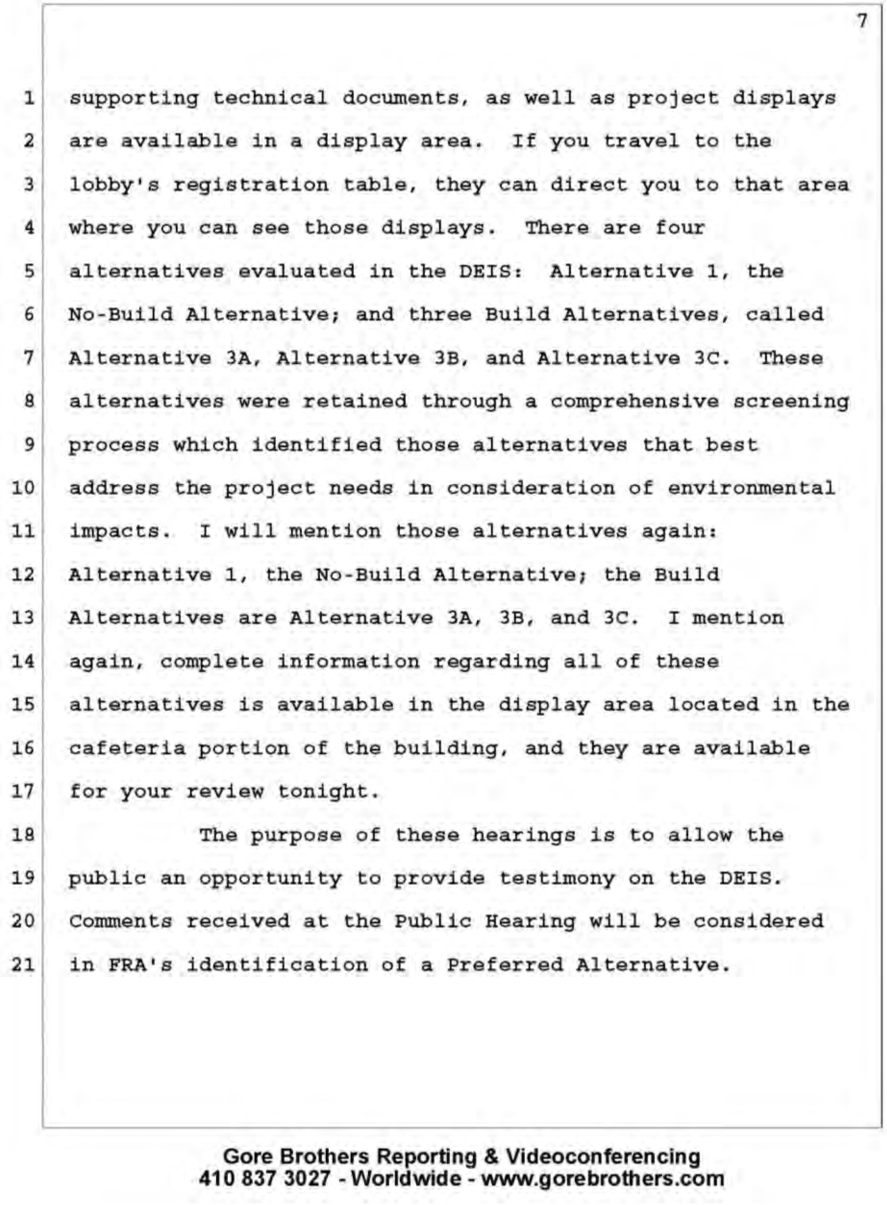
Additionally, the existing B&P Tunnel is not suited for modern high speed usage due to the current horizontal and vertical track alignments, which limit passenger train speeds through the tunnel to 30 miles per hour.

The existing B&P Tunnel is a valuable resource. The disposition of the existing tunnel needs to be considered in the project.

The DEIS, the Draft Environmental Impact Statement, analyzes impacts of the project on the natural and human environment. The DEIS provides an evaluation of the alternatives that are still under consideration and assesses environmental impacts for these alternatives. I would emphasize for those who are unaware that the DEIS and

COMMENTS

RESPONSES

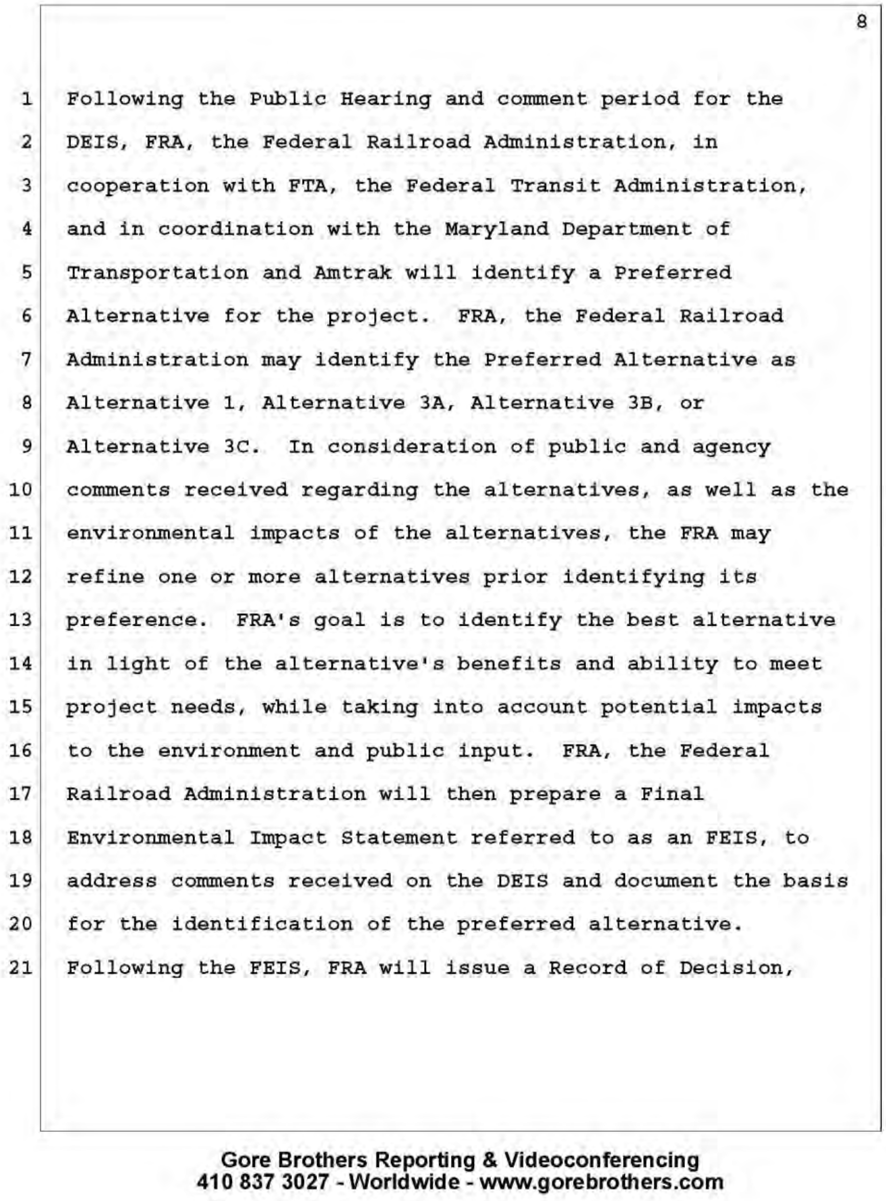


supporting technical documents, as well as project displays are available in a display area. If you travel to the lobby's registration table, they can direct you to that area where you can see those displays. There are four alternatives evaluated in the DEIS: Alternative 1, the No-Build Alternative; and three Build Alternatives, called Alternative 3A, Alternative 3B, and Alternative 3C. These alternatives were retained through a comprehensive screening process which identified those alternatives that best address the project needs in consideration of environmental impacts. I will mention those alternatives again: Alternative 1, the No-Build Alternative; the Build Alternatives are Alternative 3A, 3B, and 3C. I mention again, complete information regarding all of these alternatives is available in the display area located in the cafeteria portion of the building, and they are available for your review tonight.

The purpose of these hearings is to allow the public an opportunity to provide testimony on the DEIS. Comments received at the Public Hearing will be considered in FRA's identification of a Preferred Alternative.

COMMENTS

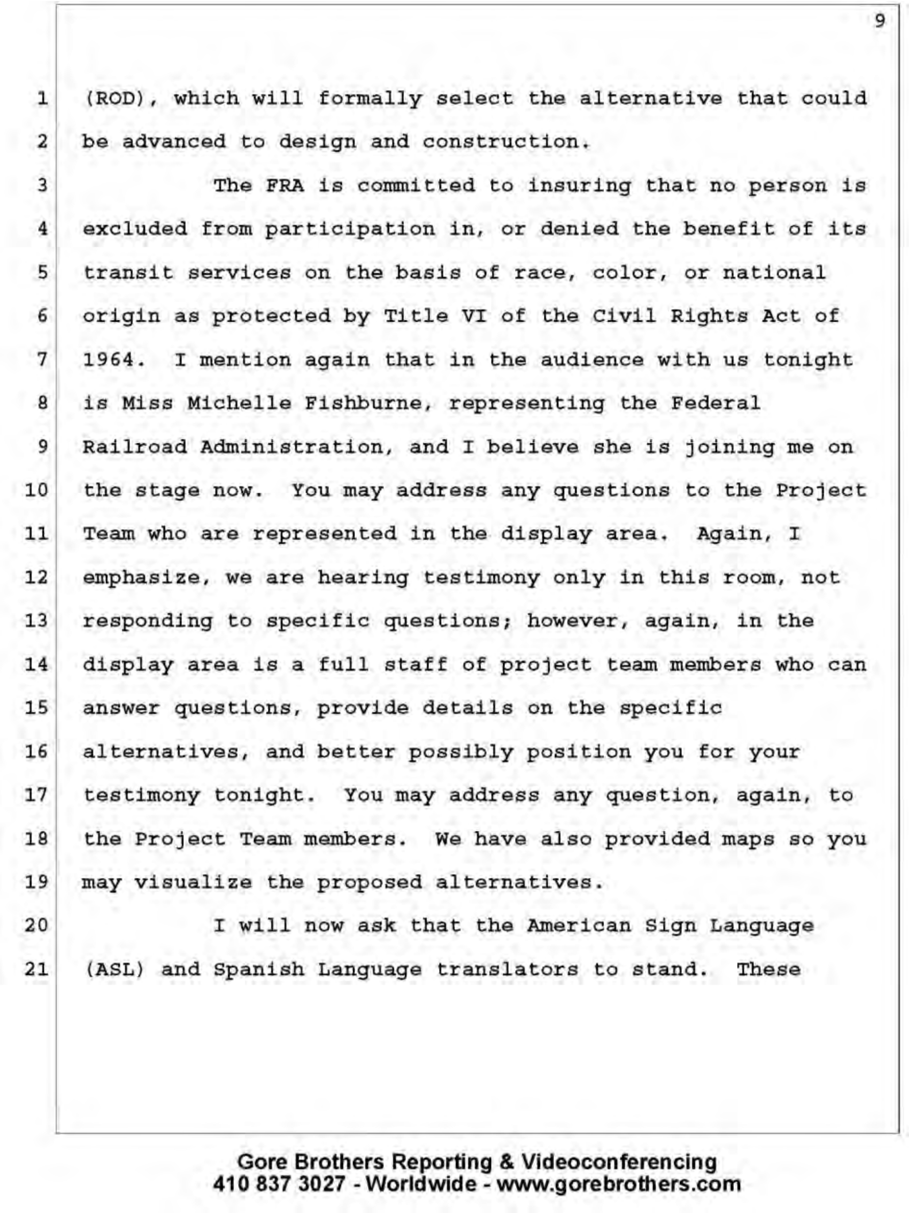
RESPONSES



Following the Public Hearing and comment period for the DEIS, FRA, the Federal Railroad Administration, in cooperation with FTA, the Federal Transit Administration, and in coordination with the Maryland Department of Transportation and Amtrak will identify a Preferred Alternative for the project. FRA, the Federal Railroad Administration may identify the Preferred Alternative as Alternative 1, Alternative 3A, Alternative 3B, or Alternative 3C. In consideration of public and agency comments received regarding the alternatives, as well as the environmental impacts of the alternatives, the FRA may refine one or more alternatives prior identifying its preference. FRA's goal is to identify the best alternative in light of the alternative's benefits and ability to meet project needs, while taking into account potential impacts to the environment and public input. FRA, the Federal Railroad Administration will then prepare a Final Environmental Impact Statement referred to as an FEIS, to address comments received on the DEIS and document the basis for the identification of the preferred alternative. Following the FEIS, FRA will issue a Record of Decision,

COMMENTS

RESPONSES



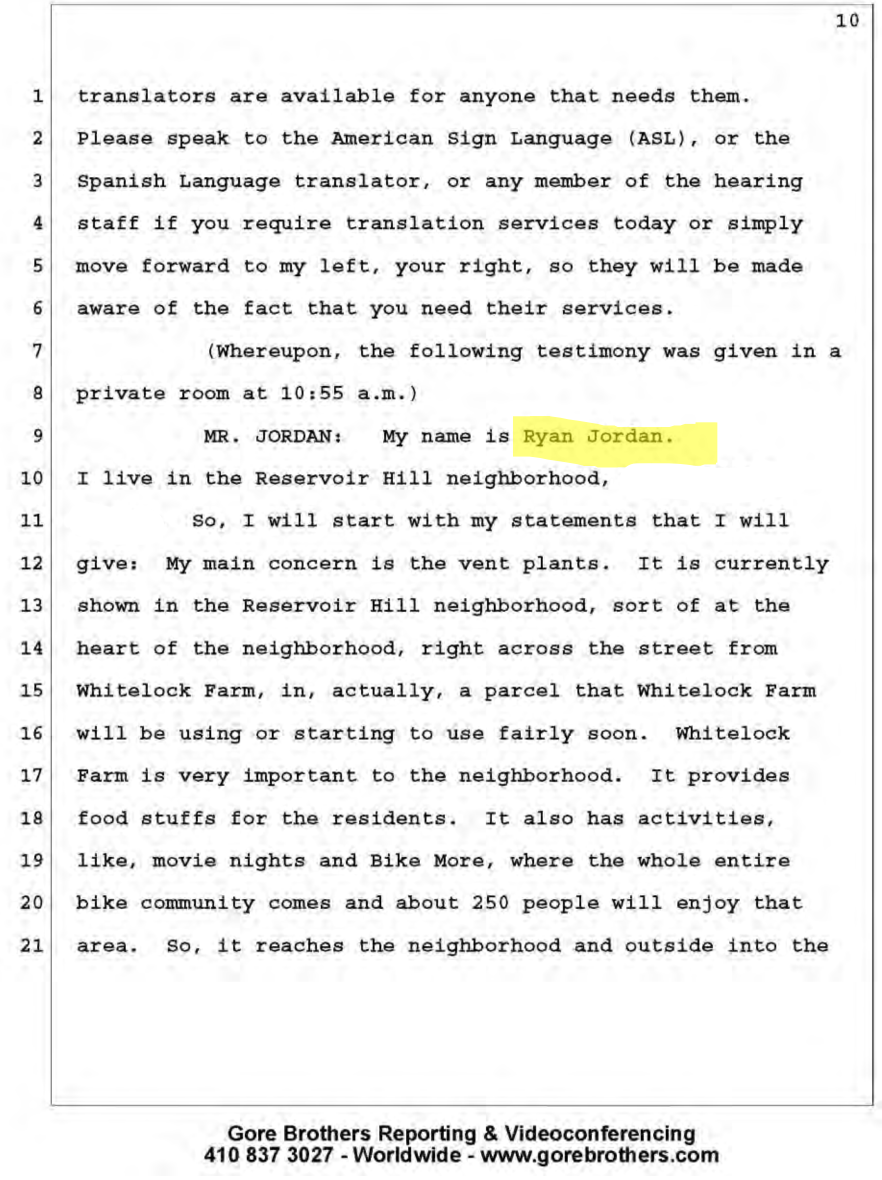
(ROD), which will formally select the alternative that could be advanced to design and construction.

The FRA is committed to insuring that no person is excluded from participation in, or denied the benefit of its transit services on the basis of race, color, or national origin as protected by Title VI of the Civil Rights Act of 1964. I mention again that in the audience with us tonight is Miss Michelle Fishburne, representing the Federal Railroad Administration, and I believe she is joining me on the stage now. You may address any questions to the Project Team who are represented in the display area. Again, I emphasize, we are hearing testimony only in this room, not responding to specific questions; however, again, in the display area is a full staff of project team members who can answer questions, provide details on the specific alternatives, and better possibly position you for your testimony tonight. You may address any question, again, to the Project Team members. We have also provided maps so you may visualize the proposed alternatives.

I will now ask that the American Sign Language (ASL) and Spanish Language translators to stand. These

COMMENTS

DEIS Comment 140:



translators are available for anyone that needs them. Please speak to the American Sign Language (ASL), or the Spanish Language translator, or any member of the hearing staff if you require translation services today or simply move forward to my left, your right, so they will be made aware of the fact that you need their services.

(Whereupon, the following testimony was given in a private room at 10:55 a.m.)

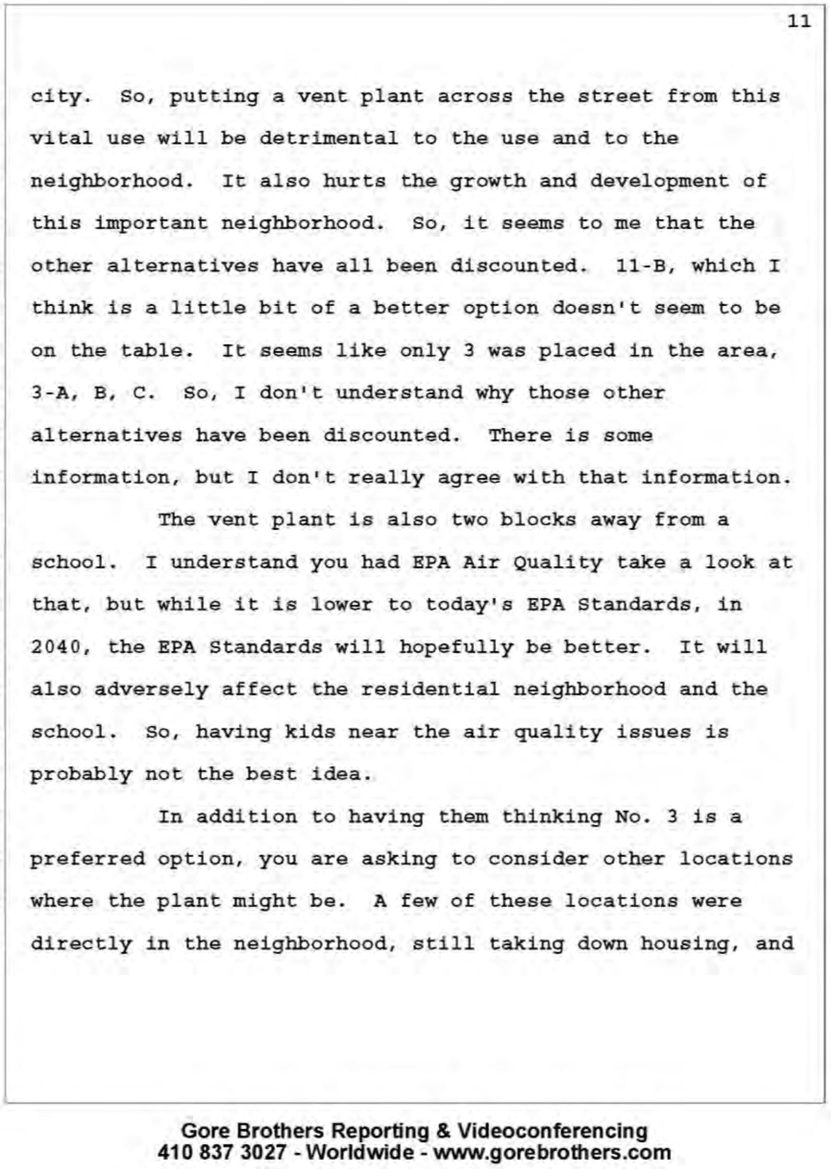
MR. JORDAN: My name is Ryan Jordan. I live in the Reservoir Hill neighborhood,

1 So, I will start with my statements that I will give: My main concern is the vent plants. It is currently shown in the Reservoir Hill neighborhood, sort of at the heart of the neighborhood, right across the street from Whitelock Farm, in, actually, a parcel that Whitelock Farm will be using or starting to use fairly soon. Whitelock Farm is very important to the neighborhood. It provides food stuffs for the residents. It also has activities, like, movie nights and Bike More, where the whole entire bike community comes and about 250 people will enjoy that area. So, it reaches the neighborhood and outside into the

RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS



11

city. So, putting a vent plant across the street from this
vital use will be detrimental to the use and to the
neighborhood. It also hurts the growth and development of
2 this important neighborhood. So, it seems to me that the
other alternatives have all been discounted. 11-B, which I
think is a little bit of a better option doesn't seem to be
on the table. It seems like only 3 was placed in the area,
3 3-A, B, C. So, I don't understand why those other
alternatives have been discounted. There is some
information, but I don't really agree with that information.

The vent plant is also two blocks away from a
school. I understand you had EPA Air Quality take a look at
4 that, but while it is lower to today's EPA Standards, in
2040, the EPA Standards will hopefully be better. It will
also adversely affect the residential neighborhood and the
school. So, having kids near the air quality issues is
probably not the best idea.

In addition to having them thinking No. 3 is a
preferred option, you are asking to consider other locations
where the plant might be. A few of these locations were
directly in the neighborhood, still taking down housing, and

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RESPONSES

Response to Comment 2:
The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

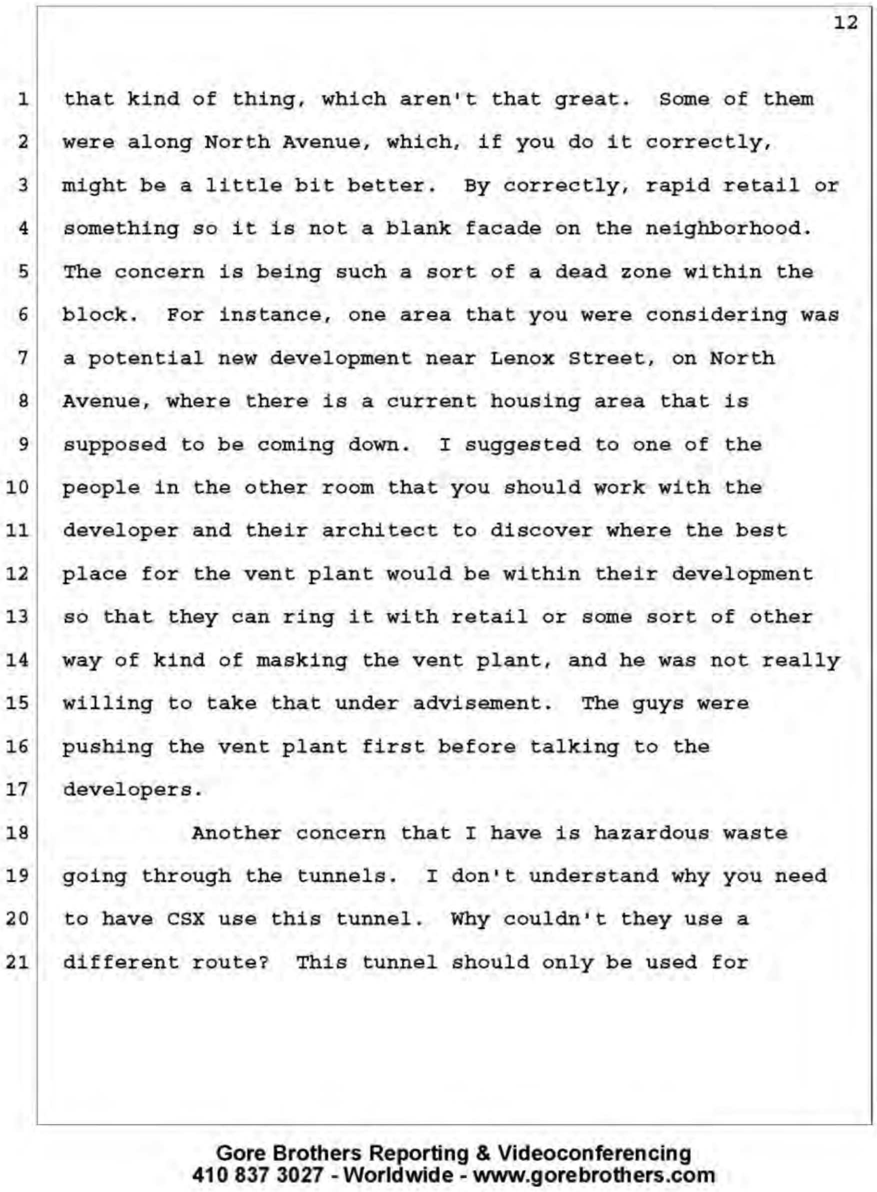
Response to Comment 3:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Since the publication of the DEIS, Alternative 3B was selected as the Preferred Alternative. Alternative 3B was advanced through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the selection of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

Response to Comment 4:
Chapter VI of this FEIS specifically reviewed Air Quality, Water, Soil, and Hazardous Material impacts on Children's Health. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis*

COMMENTS



that kind of thing, which aren't that great. Some of them were along North Avenue, which, if you do it correctly, might be a little bit better. By correctly, rapid retail or something so it is not a blank facade on the neighborhood. The concern is being such a sort of a dead zone within the block. For instance, one area that you were considering was a potential new development near Lenox Street, on North Avenue, where there is a current housing area that is supposed to be coming down. I suggested to one of the people in the other room that you should work with the developer and their architect to discover where the best place for the vent plant would be within their development so that they can ring it with retail or some sort of other way of kind of masking the vent plant, and he was not really willing to take that under advisement. The guys were pushing the vent plant first before talking to the developers.

5 Another concern that I have is hazardous waste going through the tunnels. I don't understand why you need to have CSX use this tunnel. Why couldn't they use a different route? This tunnel should only be used for

RESPONSES

levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation facilities would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

Response to Comment 5:

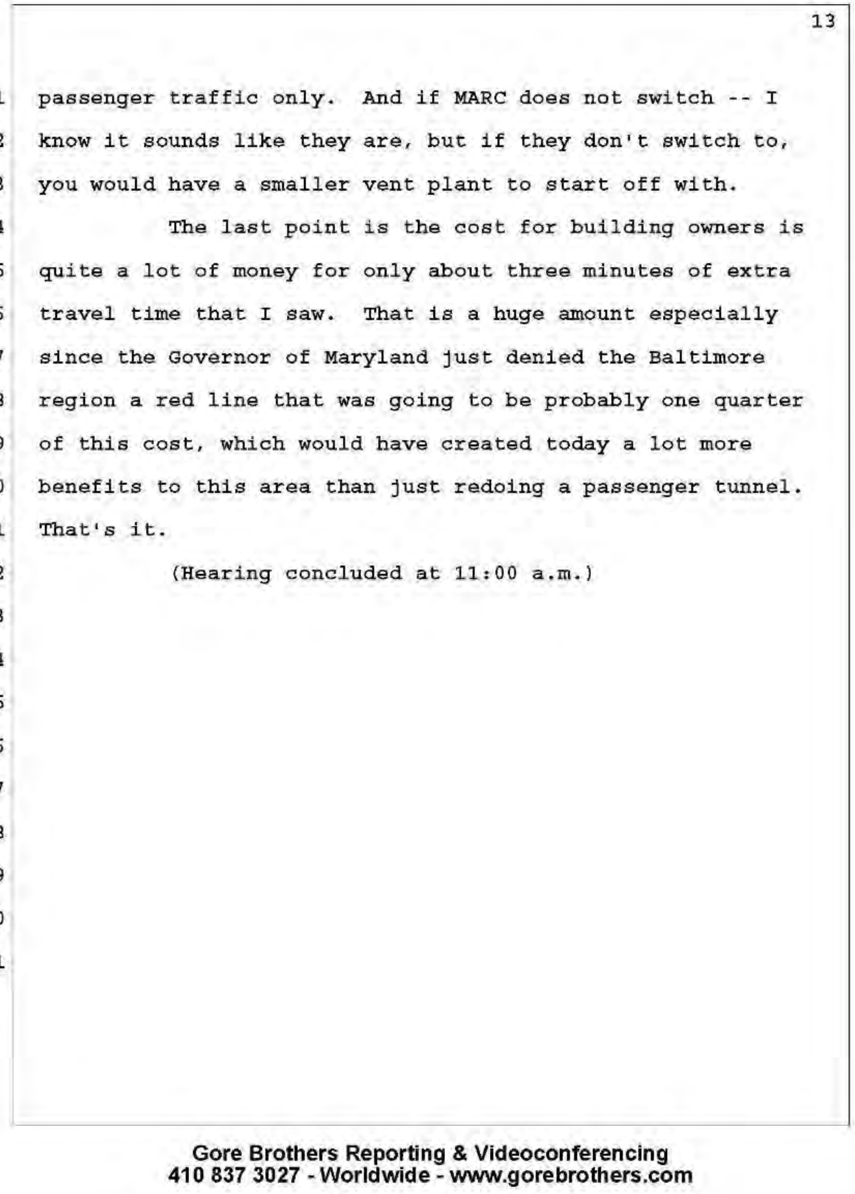
Amtrak has statutory and contractual obligations to permit the continued operation of freight trains. Currently, Norfolk Southern (NS) operates two trains through the existing B&P Tunnel daily for freight purposes.

NS has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

COMMENTS



passenger traffic only. And if MARC does not switch -- I know it sounds like they are, but if they don't switch to, you would have a smaller vent plant to start off with.

6 The last point is the cost for building owners is quite a lot of money for only about three minutes of extra travel time that I saw. That is a huge amount especially since the Governor of Maryland just denied the Baltimore region a red line that was going to be probably one quarter of this cost, which would have created today a lot more benefits to this area than just redoing a passenger tunnel. That's it.

(Hearing concluded at 11:00 a.m.)

RESPONSES

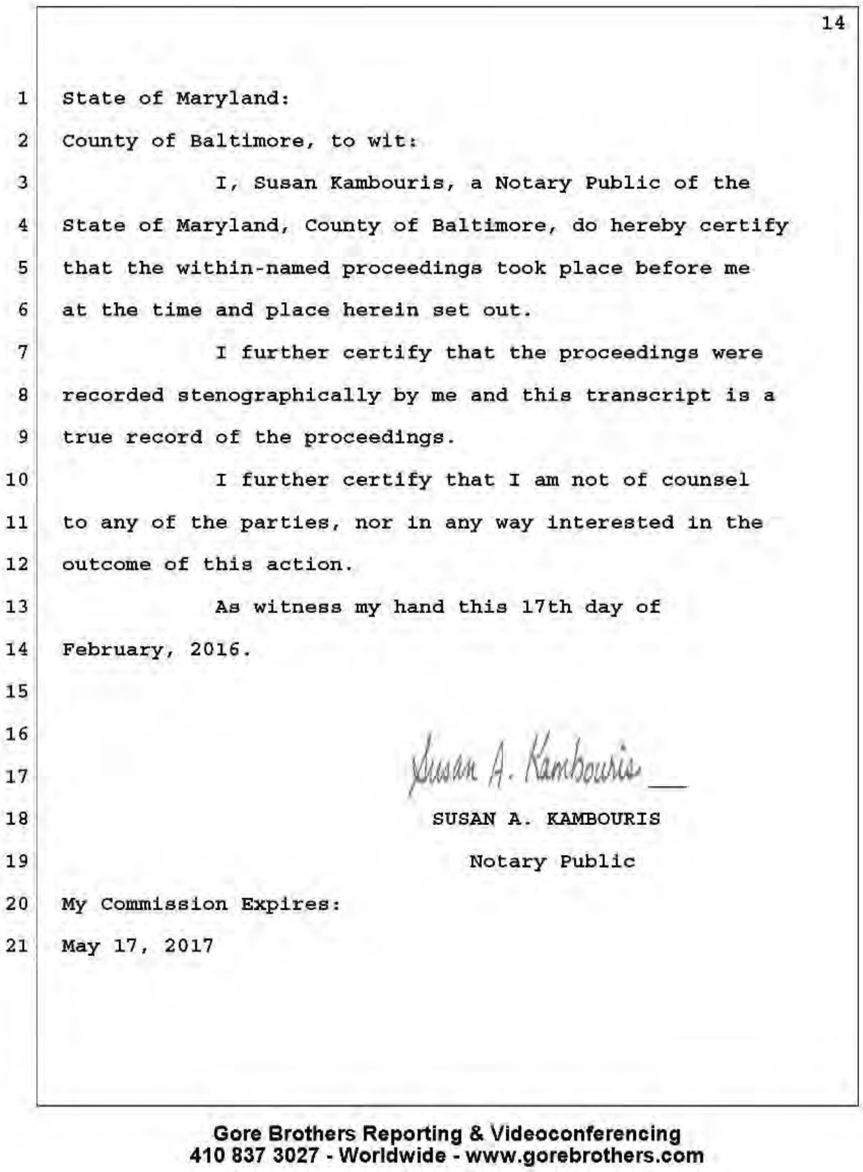
CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the B&P Tunnel Project.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Response to Comment 6:
While reducing travel time through the B&P Tunnel is one of several goals of the Project, it is not the reason that the project was initiated. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the Project is further defined in **Chapter II** of this FEIS.

COMMENTS

RESPONSES



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State of Maryland:

County of Baltimore, to wit:

I, Susan Kambouris, a Notary Public of the State of Maryland, County of Baltimore, do hereby certify that the within-named proceedings took place before me at the time and place herein set out.

I further certify that the proceedings were recorded stenographically by me and this transcript is a true record of the proceedings.

I further certify that I am not of counsel to any of the parties, nor in any way interested in the outcome of this action.

As witness my hand this 17th day of February, 2016.

Susan A. Kambouris

SUSAN A. KAMBOURIS

Notary Public

My Commission Expires:

May 17, 2017

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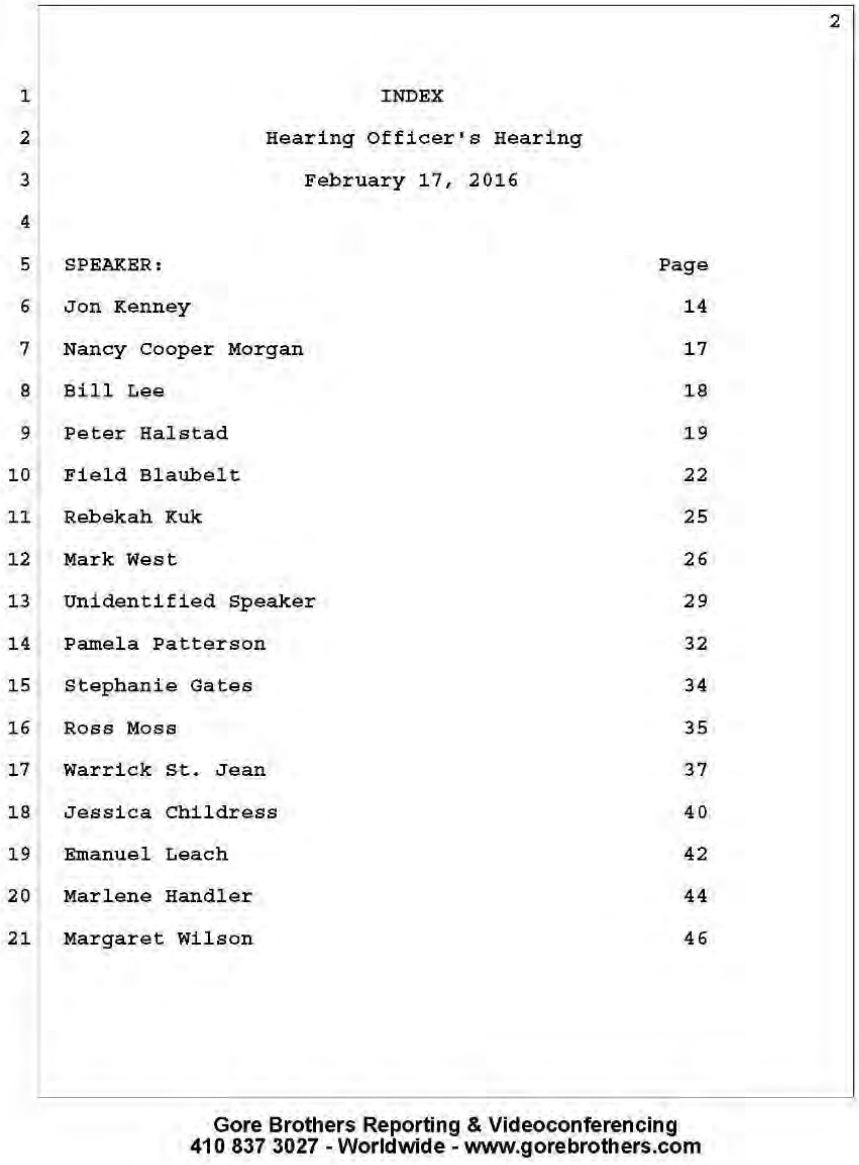

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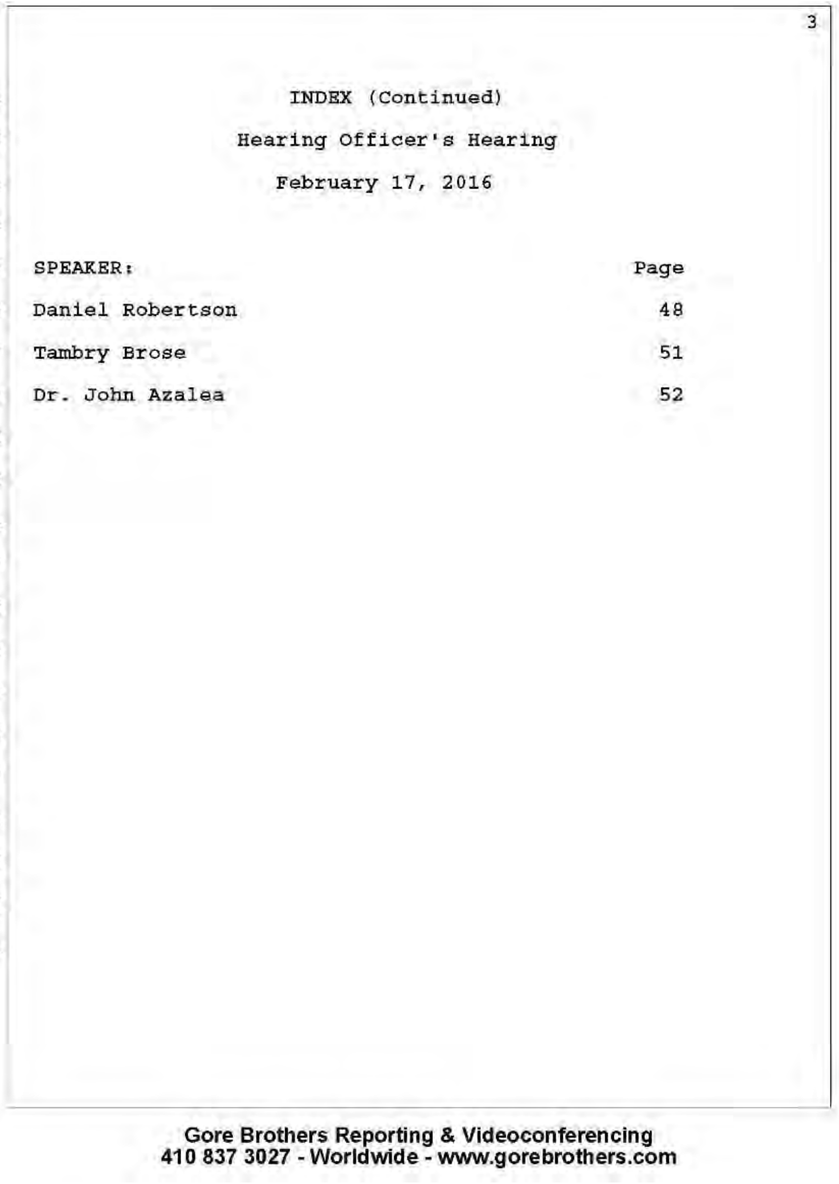

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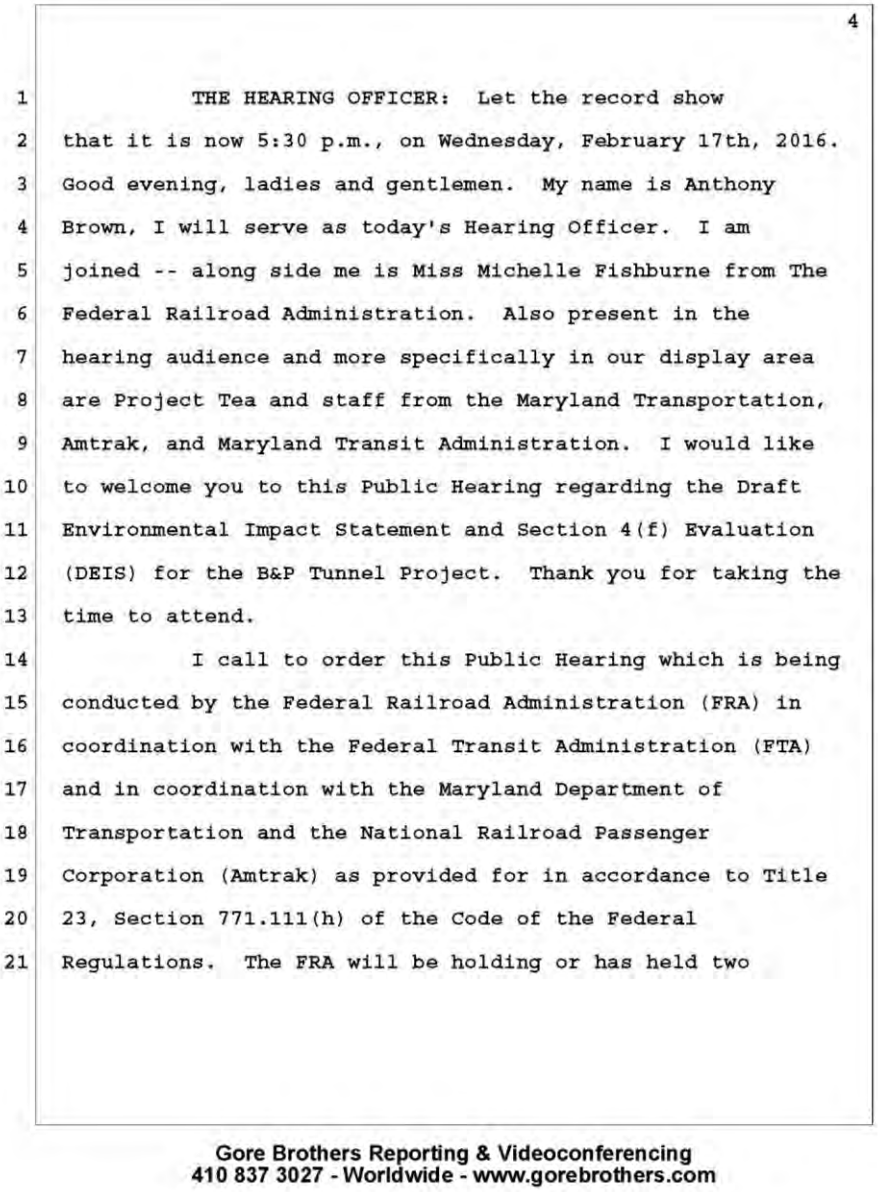

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THE HEARING OFFICER: Let the record show that it is now 5:30 p.m., on Wednesday, February 17th, 2016. Good evening, ladies and gentlemen. My name is Anthony Brown, I will serve as today's Hearing Officer. I am joined -- along side me is Miss Michelle Fishburne from The Federal Railroad Administration. Also present in the hearing audience and more specifically in our display area are Project Tea and staff from the Maryland Transportation, Amtrak, and Maryland Transit Administration. I would like to welcome you to this Public Hearing regarding the Draft Environmental Impact Statement and Section 4(f) Evaluation (DEIS) for the B&P Tunnel Project. Thank you for taking the time to attend.

I call to order this Public Hearing which is being conducted by the Federal Railroad Administration (FRA) in coordination with the Federal Transit Administration (FTA) and in coordination with the Maryland Department of Transportation and the National Railroad Passenger Corporation (Amtrak) as provided for in accordance to Title 23, Section 771.111(h) of the Code of the Federal Regulations. The FRA will be holding or has held two

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COMMENTS

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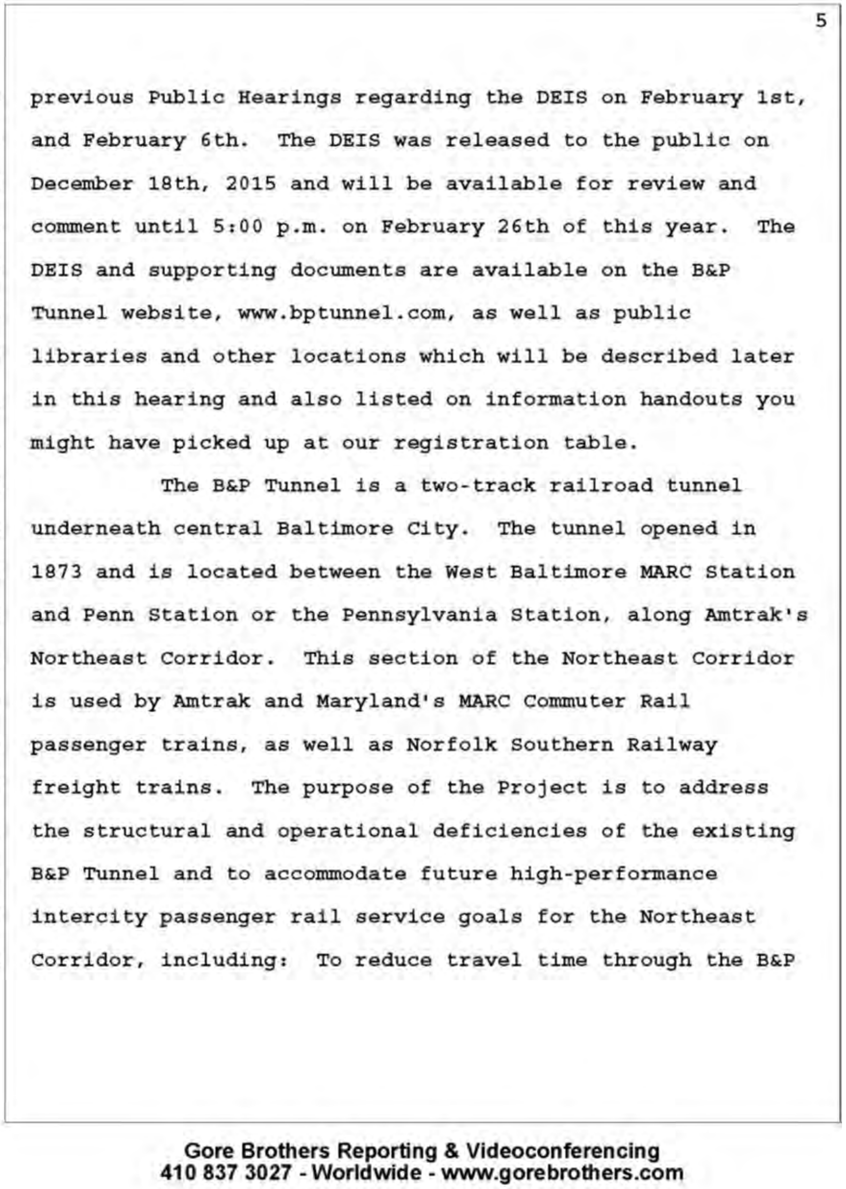

previous Public Hearings regarding the DEIS on February 1st, and February 6th. The DEIS was released to the public on December 18th, 2015 and will be available for review and comment until 5:00 p.m. on February 26th of this year. The DEIS and supporting documents are available on the B&P Tunnel website, www.bptunnel.com, as well as public libraries and other locations which will be described later in this hearing and also listed on information handouts you might have picked up at our registration table.

The B&P Tunnel is a two-track railroad tunnel underneath central Baltimore City. The tunnel opened in 1873 and is located between the West Baltimore MARC Station and Penn Station or the Pennsylvania Station, along Amtrak's Northeast Corridor. This section of the Northeast Corridor is used by Amtrak and Maryland's MARC Commuter Rail passenger trains, as well as Norfolk Southern Railway freight trains. The purpose of the Project is to address the structural and operational deficiencies of the existing B&P Tunnel and to accommodate future high-performance intercity passenger rail service goals for the Northeast Corridor, including: To reduce travel time through the B&P

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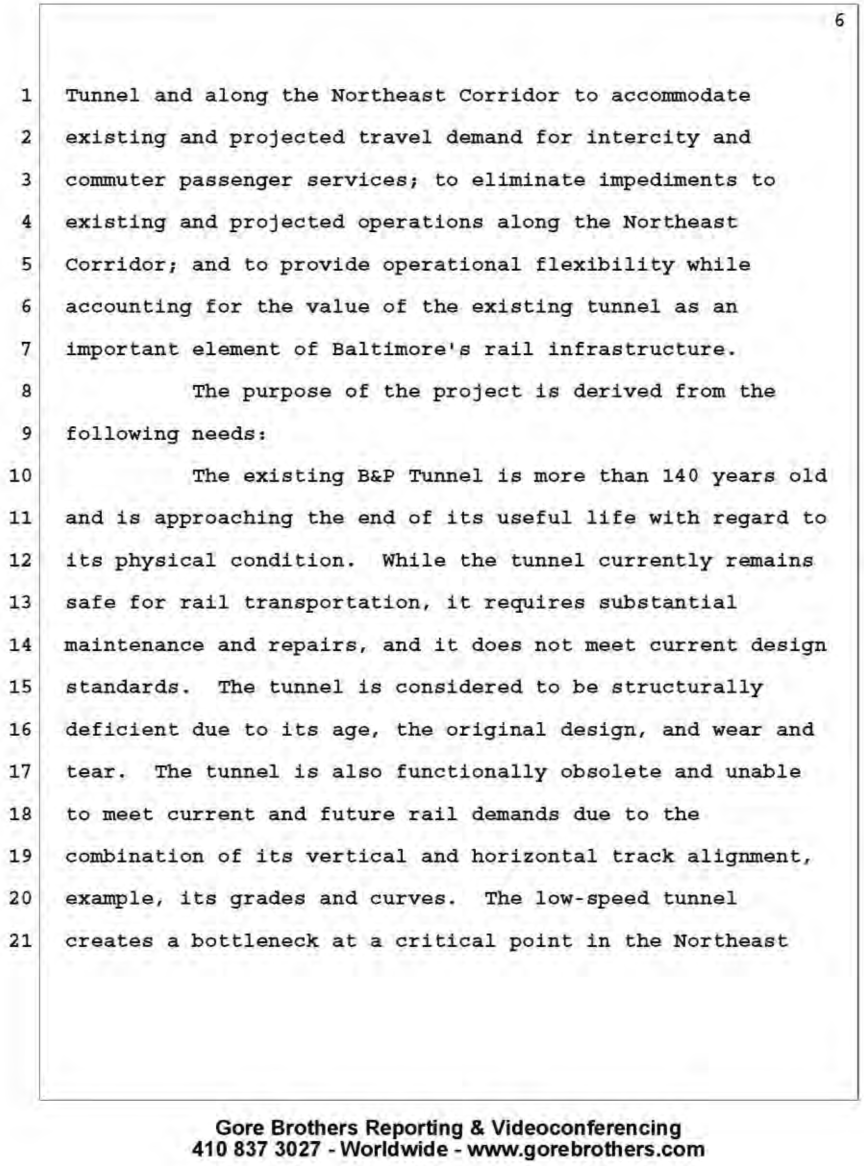

Tunnel and along the Northeast Corridor to accommodate existing and projected travel demand for intercity and commuter passenger services; to eliminate impediments to existing and projected operations along the Northeast Corridor; and to provide operational flexibility while accounting for the value of the existing tunnel as an important element of Baltimore's rail infrastructure.

The purpose of the project is derived from the following needs:

The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the tunnel currently remains safe for rail transportation, it requires substantial maintenance and repairs, and it does not meet current design standards. The tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The tunnel is also functionally obsolete and unable to meet current and future rail demands due to the combination of its vertical and horizontal track alignment, example, its grades and curves. The low-speed tunnel creates a bottleneck at a critical point in the Northeast

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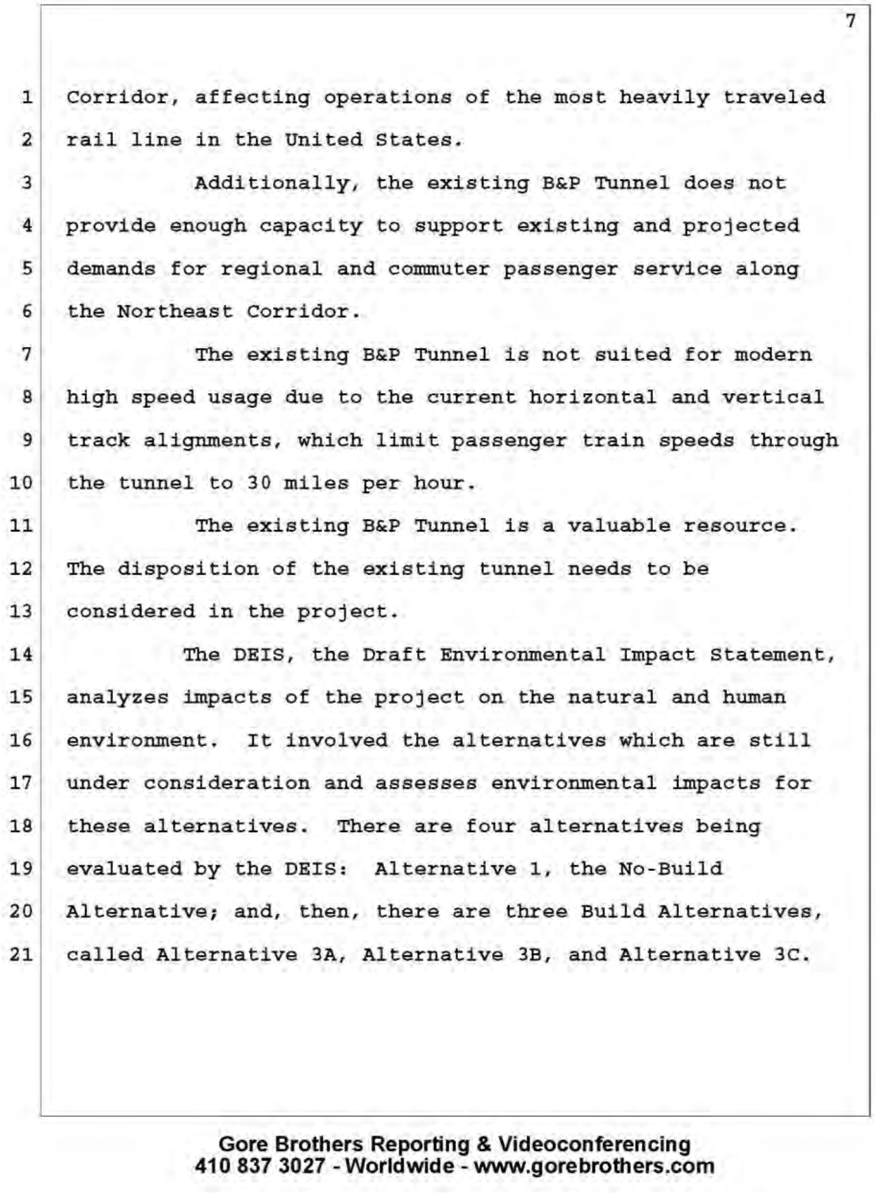

Corridor, affecting operations of the most heavily traveled rail line in the United States.

Additionally, the existing B&P Tunnel does not provide enough capacity to support existing and projected demands for regional and commuter passenger service along the Northeast Corridor.

The existing B&P Tunnel is not suited for modern high speed usage due to the current horizontal and vertical track alignments, which limit passenger train speeds through the tunnel to 30 miles per hour.

The existing B&P Tunnel is a valuable resource. The disposition of the existing tunnel needs to be considered in the project.

The DEIS, the Draft Environmental Impact Statement, analyzes impacts of the project on the natural and human environment. It involved the alternatives which are still under consideration and assesses environmental impacts for these alternatives. There are four alternatives being evaluated by the DEIS: Alternative 1, the No-Build Alternative; and, then, there are three Build Alternatives, called Alternative 3A, Alternative 3B, and Alternative 3C.

COMMENTS

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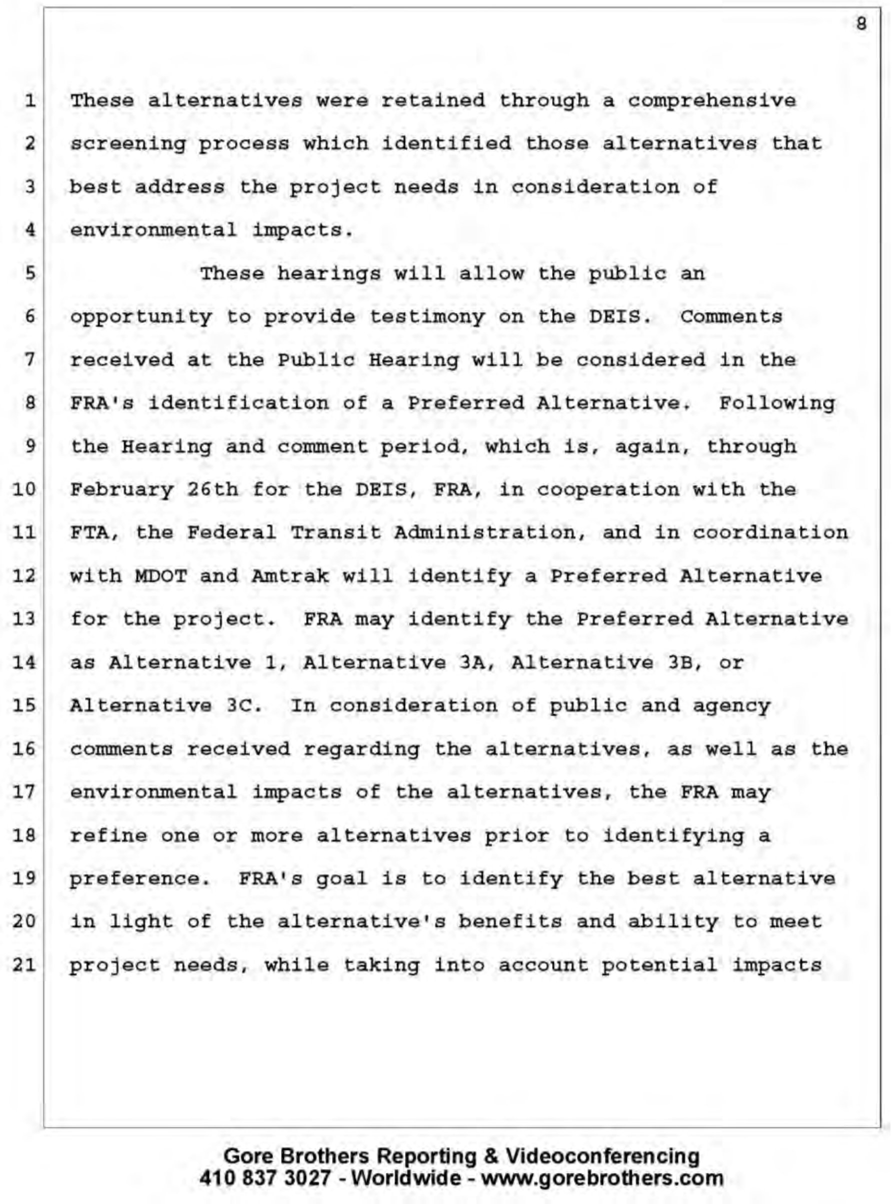

These alternatives were retained through a comprehensive screening process which identified those alternatives that best address the project needs in consideration of environmental impacts.

These hearings will allow the public an opportunity to provide testimony on the DEIS. Comments received at the Public Hearing will be considered in the FRA's identification of a Preferred Alternative. Following the Hearing and comment period, which is, again, through February 26th for the DEIS, FRA, in cooperation with the FTA, the Federal Transit Administration, and in coordination with MDOT and Amtrak will identify a Preferred Alternative for the project. FRA may identify the Preferred Alternative as Alternative 1, Alternative 3A, Alternative 3B, or Alternative 3C. In consideration of public and agency comments received regarding the alternatives, as well as the environmental impacts of the alternatives, the FRA may refine one or more alternatives prior to identifying a preference. FRA's goal is to identify the best alternative in light of the alternative's benefits and ability to meet project needs, while taking into account potential impacts

COMMENTS

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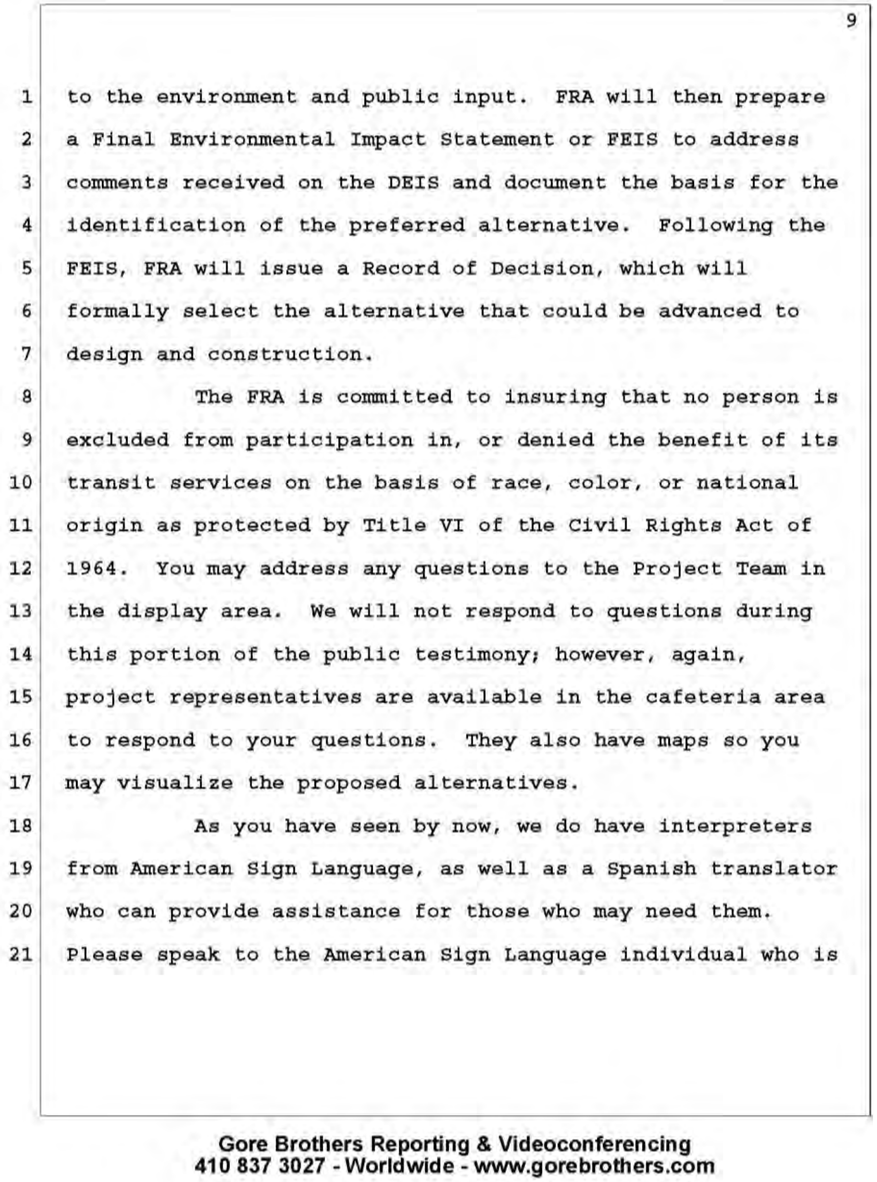

to the environment and public input. FRA will then prepare a Final Environmental Impact Statement or FEIS to address comments received on the DEIS and document the basis for the identification of the preferred alternative. Following the FEIS, FRA will issue a Record of Decision, which will formally select the alternative that could be advanced to design and construction.

The FRA is committed to insuring that no person is excluded from participation in, or denied the benefit of its transit services on the basis of race, color, or national origin as protected by Title VI of the Civil Rights Act of 1964. You may address any questions to the Project Team in the display area. We will not respond to questions during this portion of the public testimony; however, again, project representatives are available in the cafeteria area to respond to your questions. They also have maps so you may visualize the proposed alternatives.

As you have seen by now, we do have interpreters from American Sign Language, as well as a Spanish translator who can provide assistance for those who may need them. Please speak to the American Sign Language individual who is

COMMENTS

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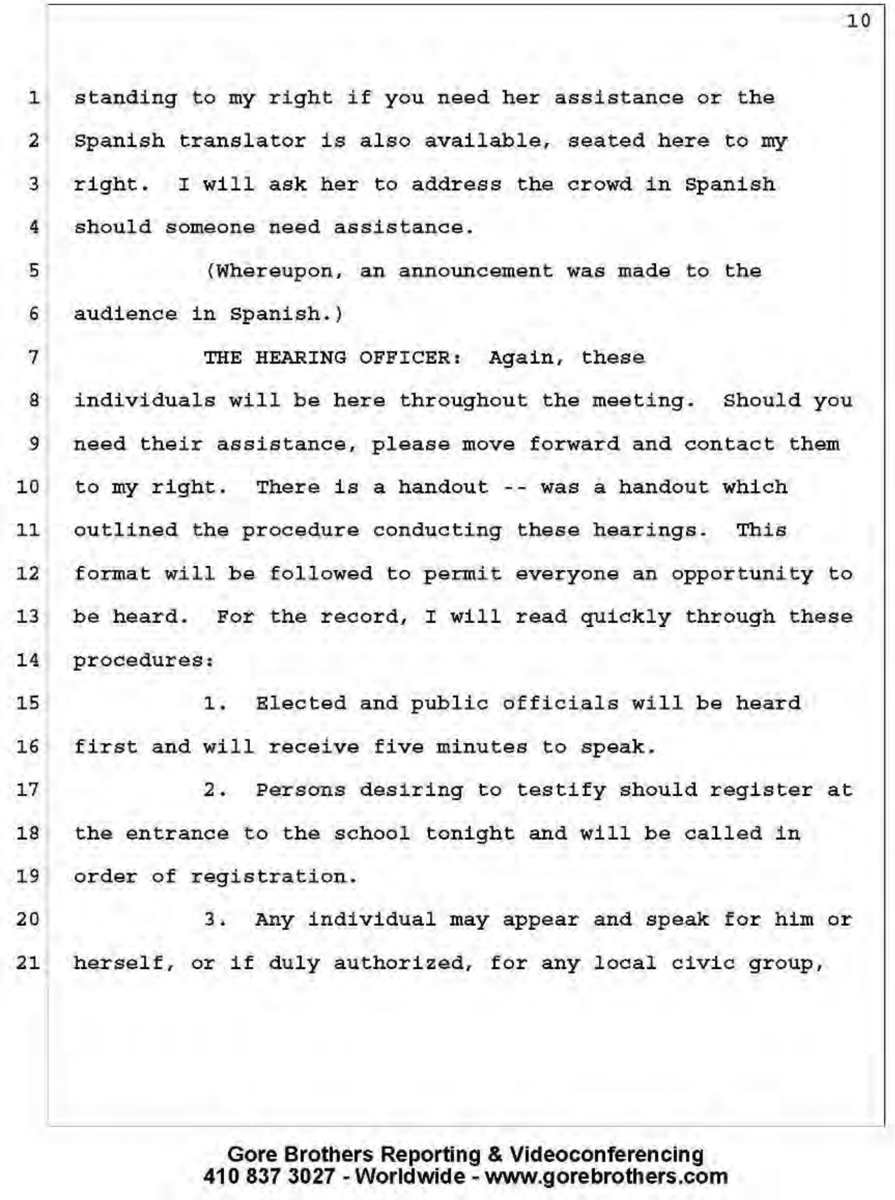


standing to my right if you need her assistance or the Spanish translator is also available, seated here to my right. I will ask her to address the crowd in Spanish should someone need assistance.

(Whereupon, an announcement was made to the audience in Spanish.)

THE HEARING OFFICER: Again, these individuals will be here throughout the meeting. Should you need their assistance, please move forward and contact them to my right. There is a handout -- was a handout which outlined the procedure conducting these hearings. This format will be followed to permit everyone an opportunity to be heard. For the record, I will read quickly through these procedures:

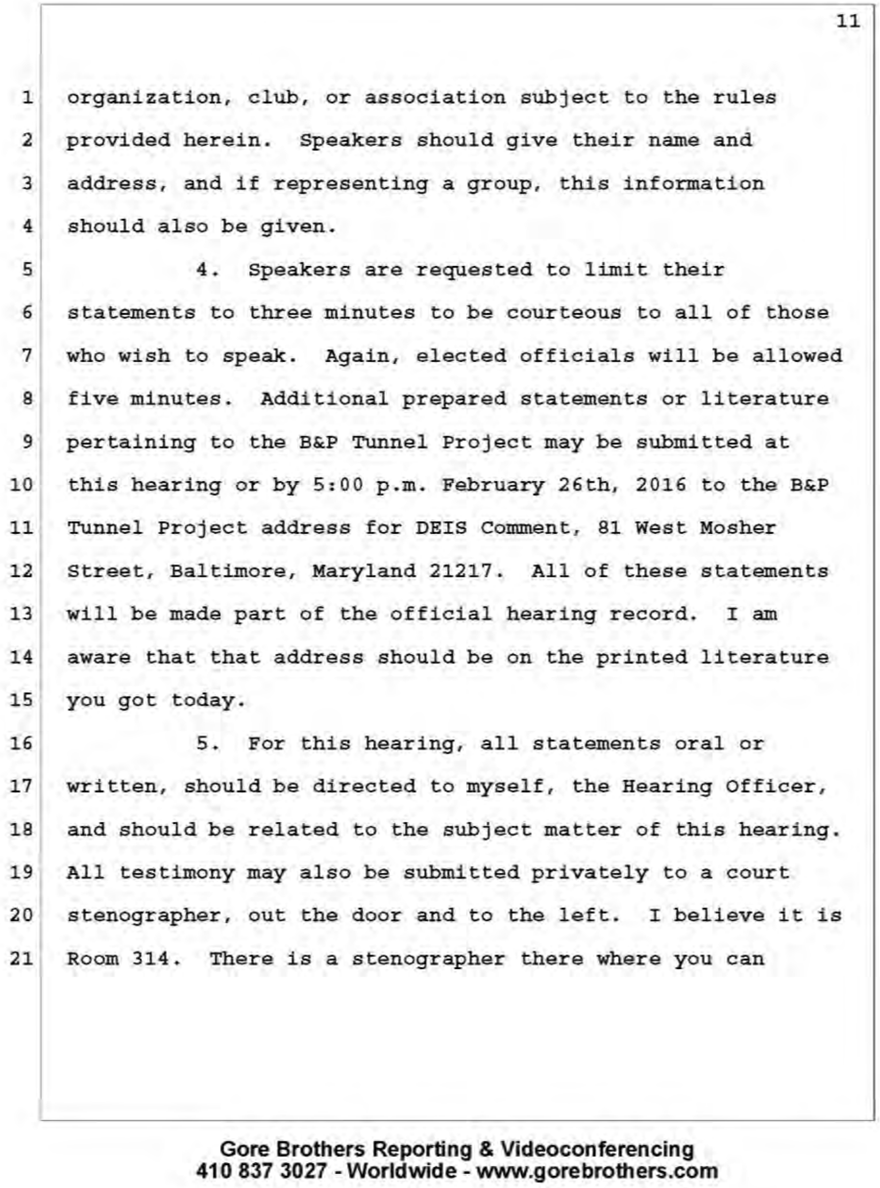
1. Elected and public officials will be heard first and will receive five minutes to speak.

2. Persons desiring to testify should register at the entrance to the school tonight and will be called in order of registration.

3. Any individual may appear and speak for him or herself, or if duly authorized, for any local civic group,

COMMENTS

RESPONSES



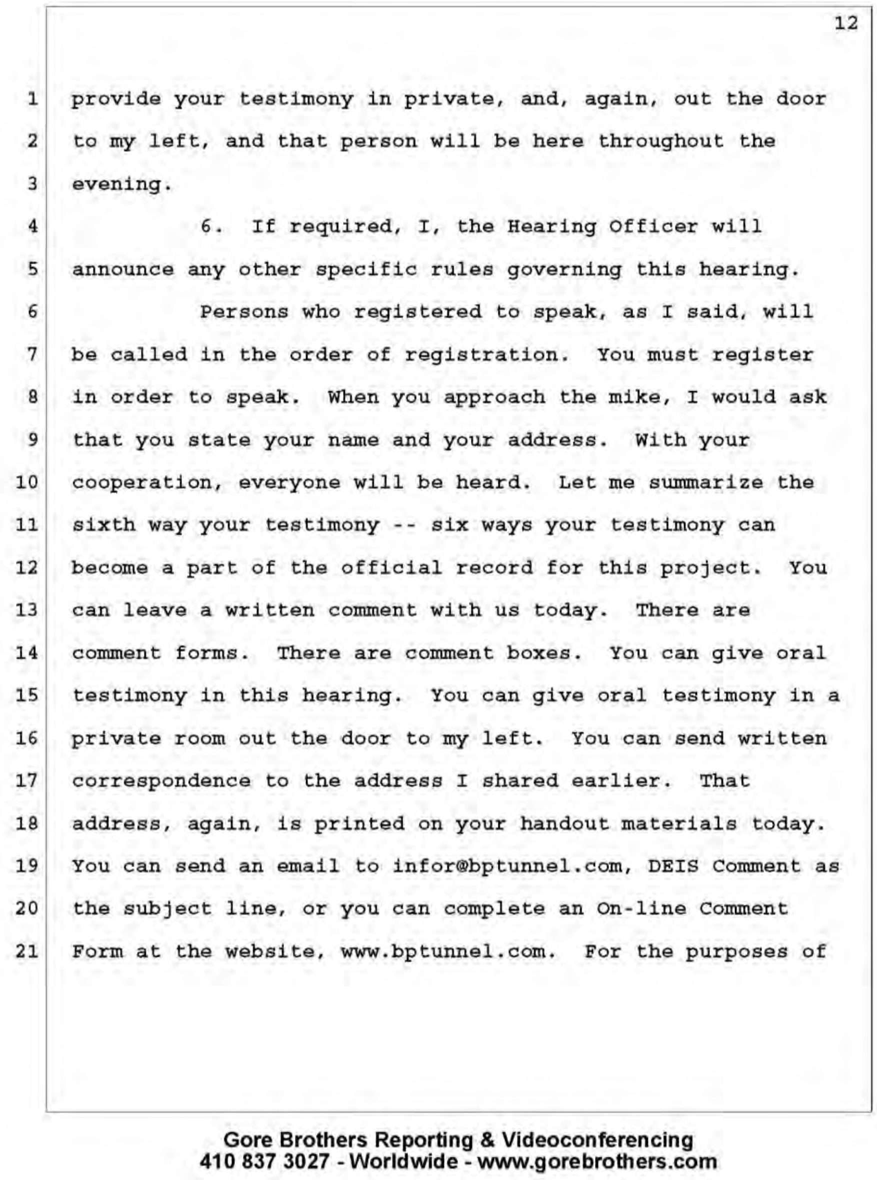
organization, club, or association subject to the rules provided herein. Speakers should give their name and address, and if representing a group, this information should also be given.

4. Speakers are requested to limit their statements to three minutes to be courteous to all of those who wish to speak. Again, elected officials will be allowed five minutes. Additional prepared statements or literature pertaining to the B&P Tunnel Project may be submitted at this hearing or by 5:00 p.m. February 26th, 2016 to the B&P Tunnel Project address for DEIS Comment, 81 West Mosher Street, Baltimore, Maryland 21217. All of these statements will be made part of the official hearing record. I am aware that that address should be on the printed literature you got today.

5. For this hearing, all statements oral or written, should be directed to myself, the Hearing Officer, and should be related to the subject matter of this hearing. All testimony may also be submitted privately to a court stenographer, out the door and to the left. I believe it is Room 314. There is a stenographer there where you can

COMMENTS

RESPONSES



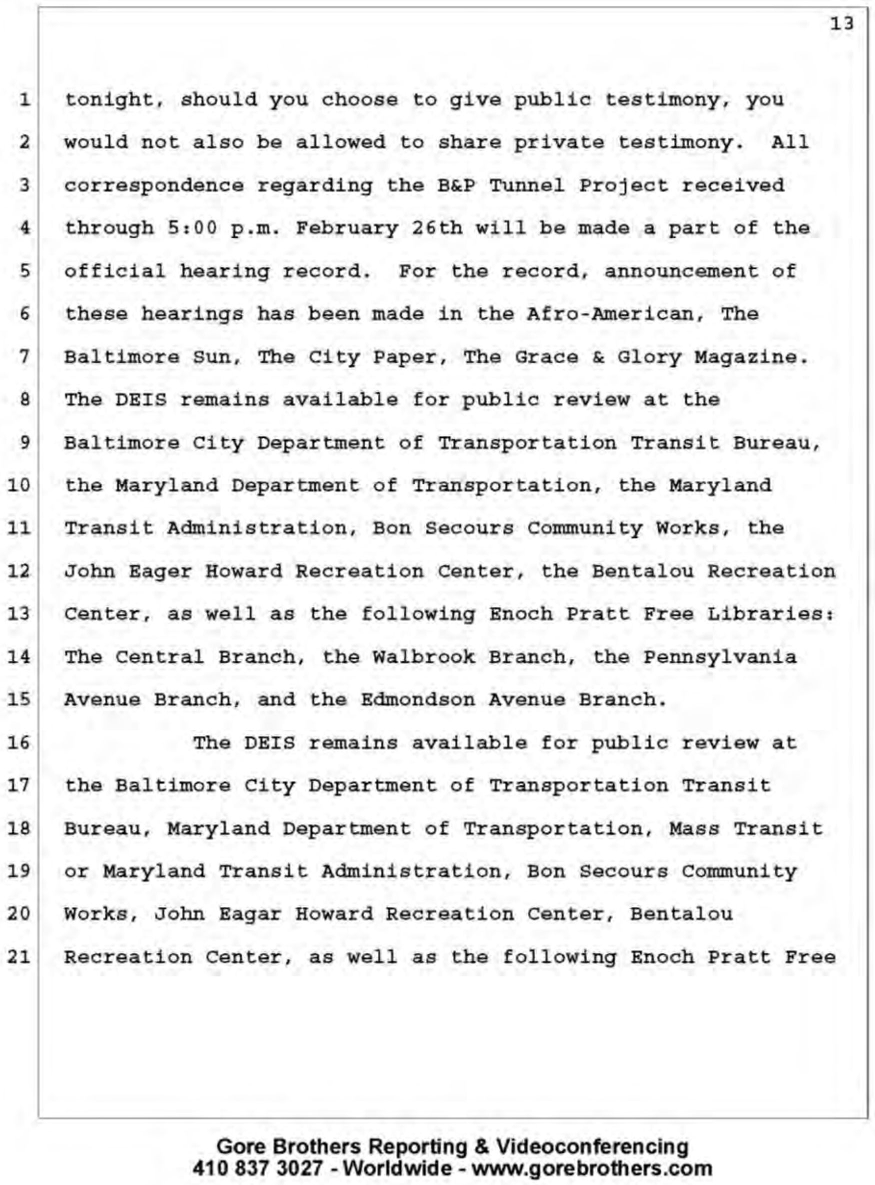
provide your testimony in private, and, again, out the door to my left, and that person will be here throughout the evening.

6. If required, I, the Hearing Officer will announce any other specific rules governing this hearing.

Persons who registered to speak, as I said, will be called in the order of registration. You must register in order to speak. When you approach the mike, I would ask that you state your name and your address. With your cooperation, everyone will be heard. Let me summarize the sixth way your testimony -- six ways your testimony can become a part of the official record for this project. You can leave a written comment with us today. There are comment forms. There are comment boxes. You can give oral testimony in this hearing. You can give oral testimony in a private room out the door to my left. You can send written correspondence to the address I shared earlier. That address, again, is printed on your handout materials today. You can send an email to infor@bptunnel.com, DEIS Comment as the subject line, or you can complete an On-line Comment Form at the website, www.bptunnel.com. For the purposes of

COMMENTS

RESPONSES



tonight, should you choose to give public testimony, you would not also be allowed to share private testimony. All correspondence regarding the B&P Tunnel Project received through 5:00 p.m. February 26th will be made a part of the official hearing record. For the record, announcement of these hearings has been made in the Afro-American, The Baltimore Sun, The City Paper, The Grace & Glory Magazine. The DEIS remains available for public review at the Baltimore City Department of Transportation Transit Bureau, the Maryland Department of Transportation, the Maryland Transit Administration, Bon Secours Community Works, the John Eager Howard Recreation Center, the Bentalou Recreation Center, as well as the following Enoch Pratt Free Libraries: The Central Branch, the Walbrook Branch, the Pennsylvania Avenue Branch, and the Edmondson Avenue Branch.

The DEIS remains available for public review at the Baltimore City Department of Transportation Transit Bureau, Maryland Department of Transportation, Mass Transit or Maryland Transit Administration, Bon Secours Community Works, John Eagar Howard Recreation Center, Bentalou Recreation Center, as well as the following Enoch Pratt Free

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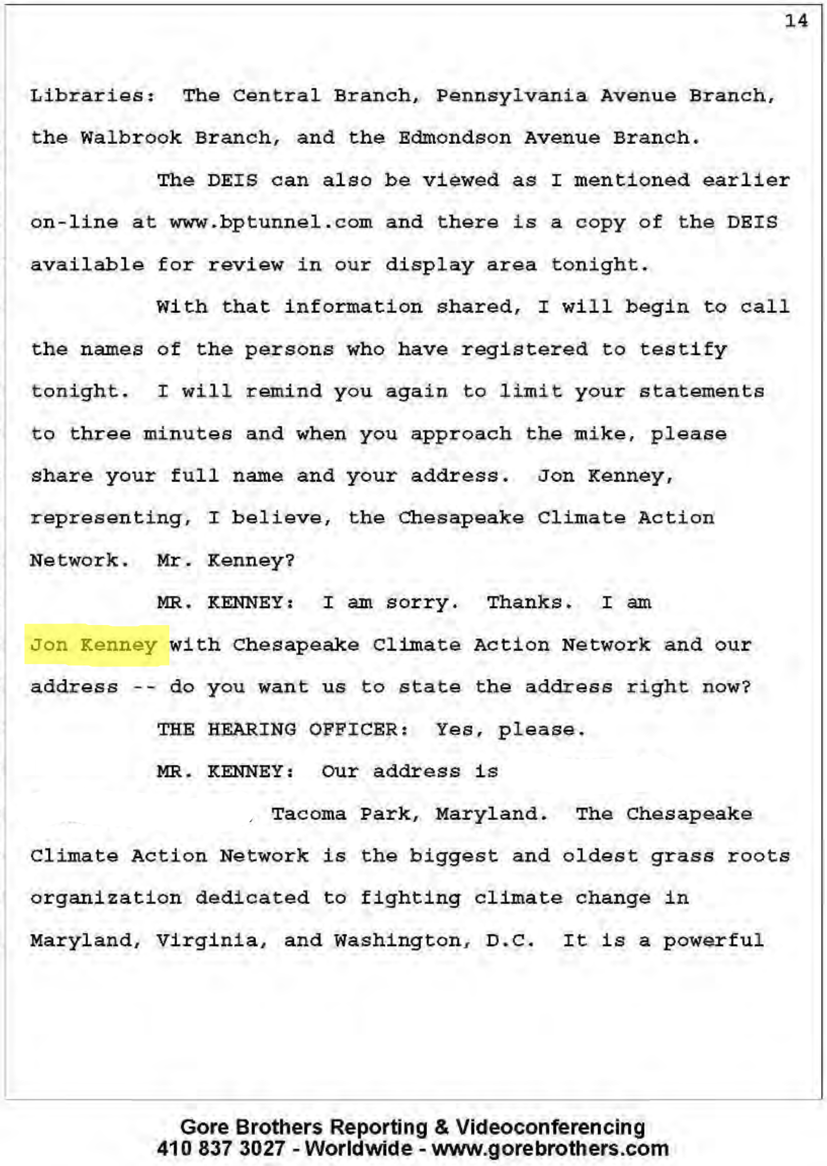
DEIS Comment 141:



Libraries: The Central Branch, Pennsylvania Avenue Branch, the Walbrook Branch, and the Edmondson Avenue Branch.

The DEIS can also be viewed as I mentioned earlier on-line at www.bptunnel.com and there is a copy of the DEIS available for review in our display area tonight.

With that information shared, I will begin to call the names of the persons who have registered to testify tonight. I will remind you again to limit your statements to three minutes and when you approach the mike, please share your full name and your address. Jon Kenney, representing, I believe, the Chesapeake Climate Action Network. Mr. Kenney?

MR. KENNEY: I am sorry. Thanks. I am Jon Kenney with Chesapeake Climate Action Network and our address -- do you want us to state the address right now?

THE HEARING OFFICER: Yes, please.

MR. KENNEY: Our address is [redacted] Tacoma Park, Maryland. The Chesapeake Climate Action Network is the biggest and oldest grass roots organization dedicated to fighting climate change in Maryland, Virginia, and Washington, D.C. It is a powerful

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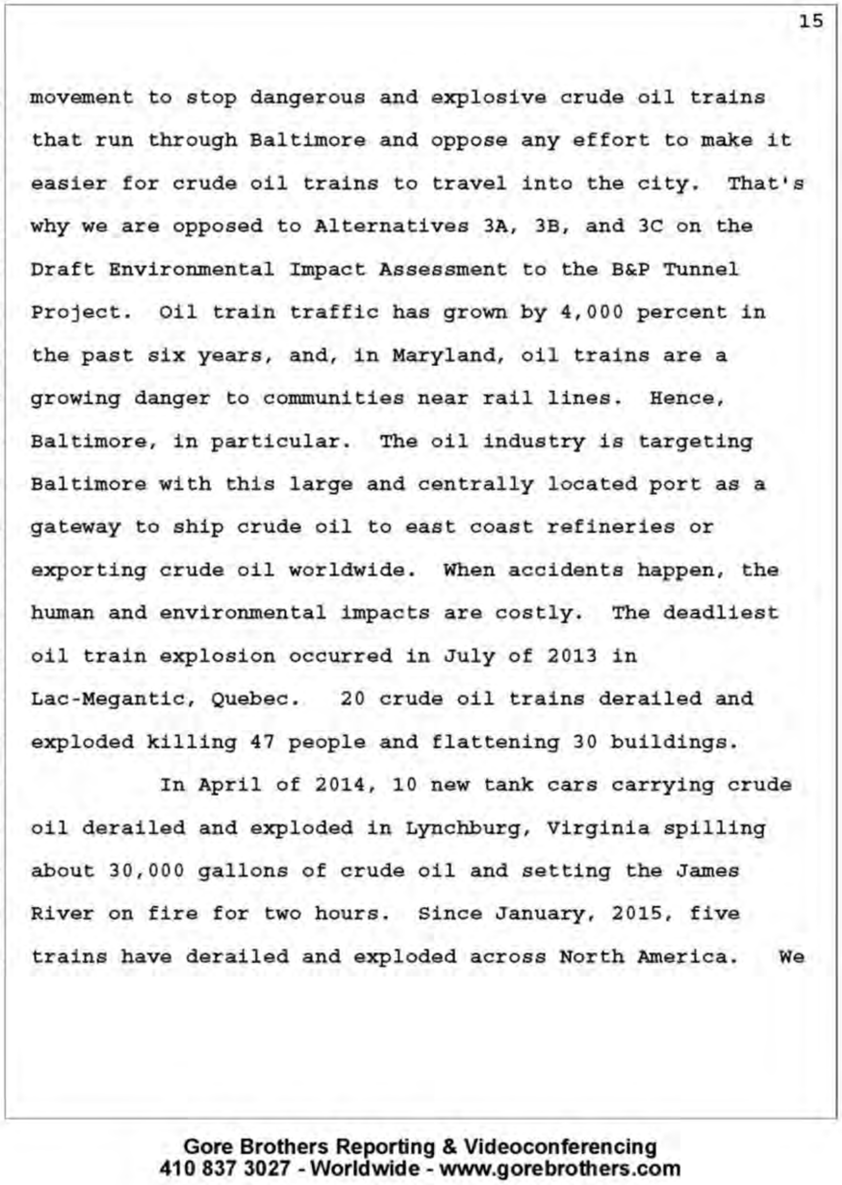
COMMENTS



movement to stop dangerous and explosive crude oil trains
1 that run through Baltimore and oppose any effort to make it easier for crude oil trains to travel into the city. That's why we are opposed to Alternatives 3A, 3B, and 3C on the
Draft Environmental Impact Assessment to the B&P Tunnel Project. Oil train traffic has grown by 4,000 percent in the past six years, and, in Maryland, oil trains are a growing danger to communities near rail lines. Hence, Baltimore, in particular. The oil industry is targeting Baltimore with this large and centrally located port as a gateway to ship crude oil to east coast refineries or
2 exporting crude oil worldwide. When accidents happen, the human and environmental impacts are costly. The deadliest oil train explosion occurred in July of 2013 in Lac-Megantic, Quebec. 20 crude oil trains derailed and exploded killing 47 people and flattening 30 buildings.

In April of 2014, 10 new tank cars carrying crude oil derailed and exploded in Lynchburg, Virginia spilling about 30,000 gallons of crude oil and setting the James River on fire for two hours. Since January, 2015, five trains have derailed and exploded across North America. We

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RESPONSES

Response to Comment 1:
Norfolk Southern has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

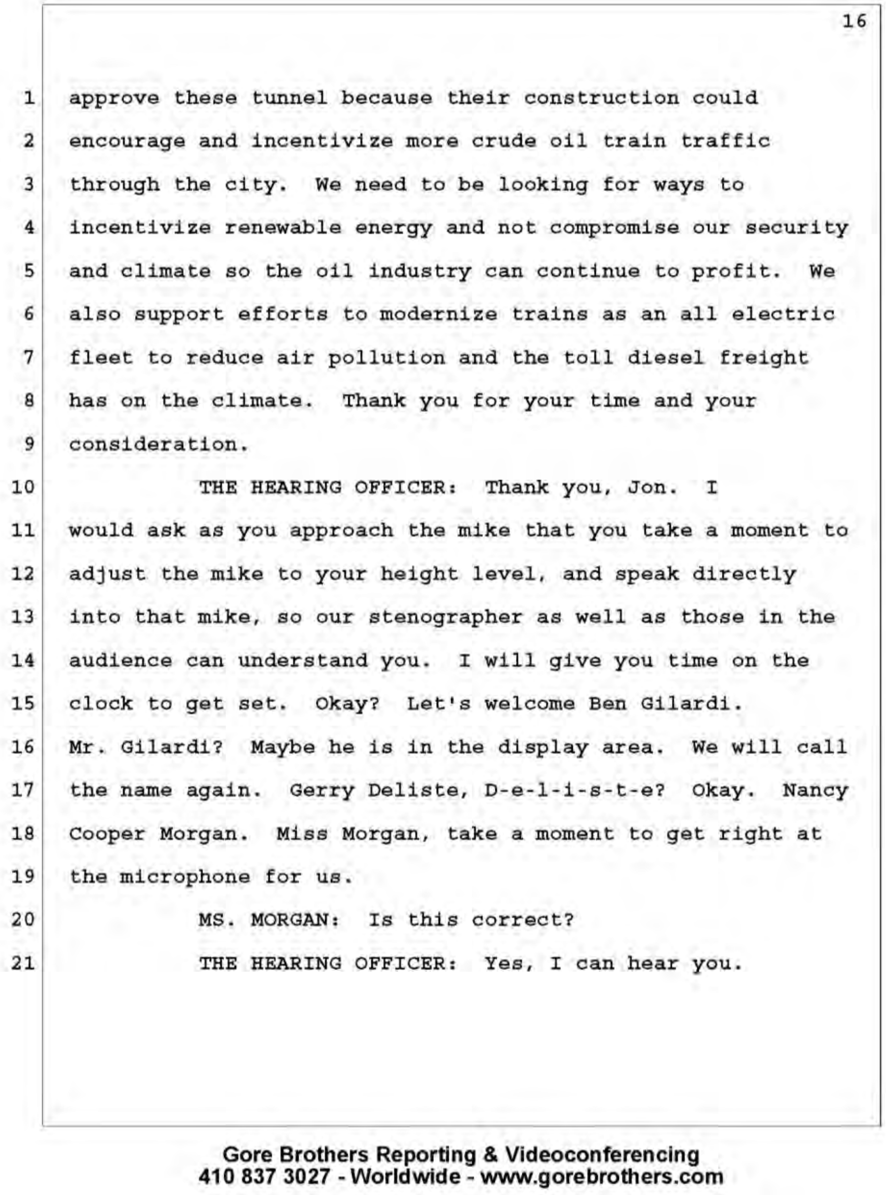
> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

Response to Comment 2:
The Project has been planned mostly underground in order to avoid greater impacts to the community. Fire in a tunnel is much less damaging to a community than a fire or other emergency event on an above-ground track running through the neighborhood. The new B&P Tunnel will be designed to be better equipped and prepared than the current B&P Tunnel.

COMMENTS



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3 approve these tunnel because their construction could encourage and incentivize more crude oil train traffic through the city. We need to be looking for ways to incentivize renewable energy and not compromise our security and climate so the oil industry can continue to profit. We also support efforts to modernize trains as an all electric fleet to reduce air pollution and the toll diesel freight has on the climate. Thank you for your time and your consideration.

THE HEARING OFFICER: Thank you, Jon. I would ask as you approach the mike that you take a moment to adjust the mike to your height level, and speak directly into that mike, so our stenographer as well as those in the audience can understand you. I will give you time on the clock to get set. Okay? Let's welcome Ben Gilardi. Mr. Gilardi? Maybe he is in the display area. We will call the name again. Gerry Deliste, D-e-l-i-s-t-e? Okay. Nancy Cooper Morgan. Miss Morgan, take a moment to get right at the microphone for us.

MS. MORGAN: Is this correct?

THE HEARING OFFICER: Yes, I can hear you.

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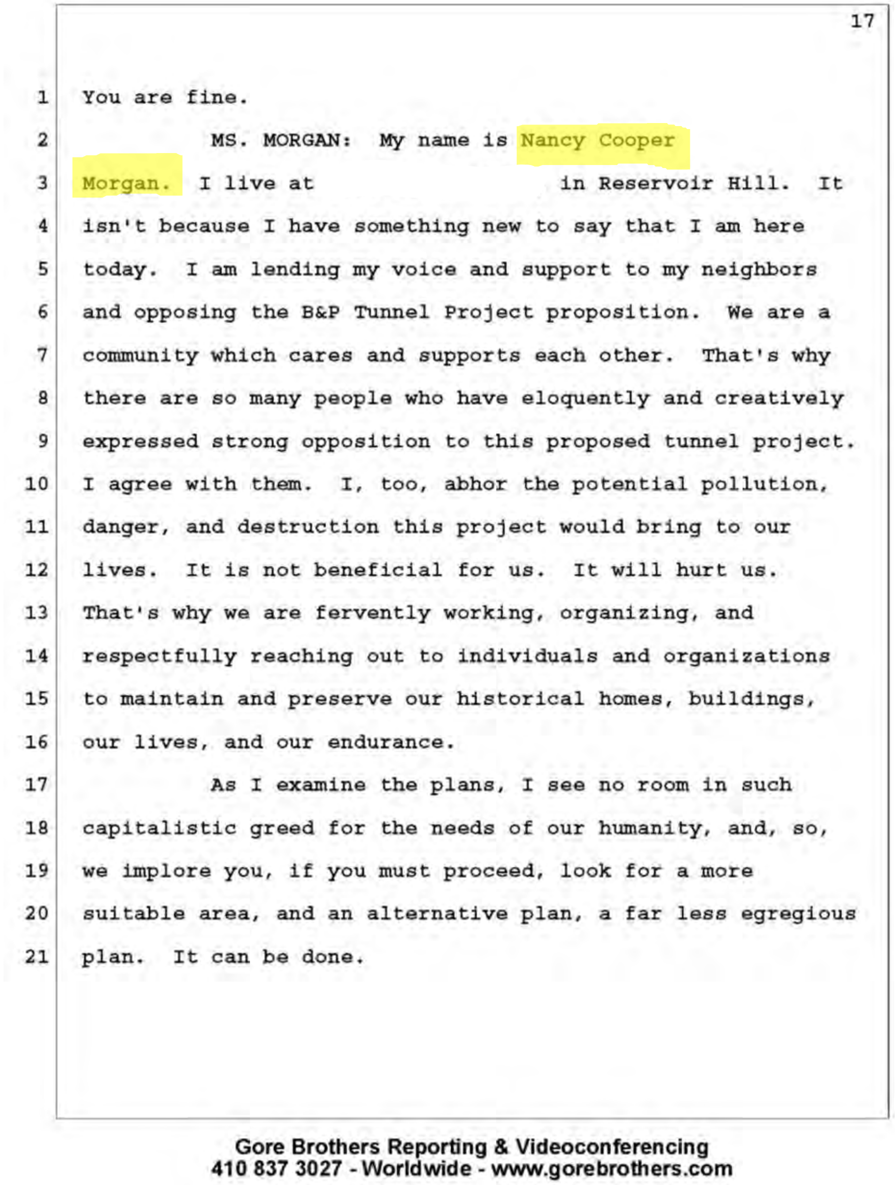
RESPONSES

Response to Comment 3:
The type of locomotive traveling through the tunnel is determined by the train service operator. As per the 2040 projections, of the 388 daily vehicles running through the tunnel, 222 will be electric (Acela, NE Regional, and Metropolitan), and 166 will be diesel (2 freight and 164 MARC). Please refer to **Chapter VI** for additional information.

COMMENTS

DEIS Comment 142:



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You are fine.

MS. MORGAN: My name is Nancy Cooper Morgan. I live at in Reservoir Hill. It isn't because I have something new to say that I am here today. I am lending my voice and support to my neighbors and opposing the B&P Tunnel Project proposition. We are a community which cares and supports each other. That's why there are so many people who have eloquently and creatively expressed strong opposition to this proposed tunnel project.

1 I agree with them. I, too, abhor the potential pollution, danger, and destruction this project would bring to our lives. It is not beneficial for us. It will hurt us.

That's why we are fervently working, organizing, and respectfully reaching out to individuals and organizations to maintain and preserve our historical homes, buildings, our lives, and our endurance.

2 As I examine the plans, I see no room in such capitalistic greed for the needs of our humanity, and, so, we implore you, if you must proceed, look for a more suitable area, and an alternative plan, a far less egregious plan. It can be done.

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RESPONSES

Response to Comment 1:
The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are in **Chapter VI**.

Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII.**

No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

Response to Comment 2:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

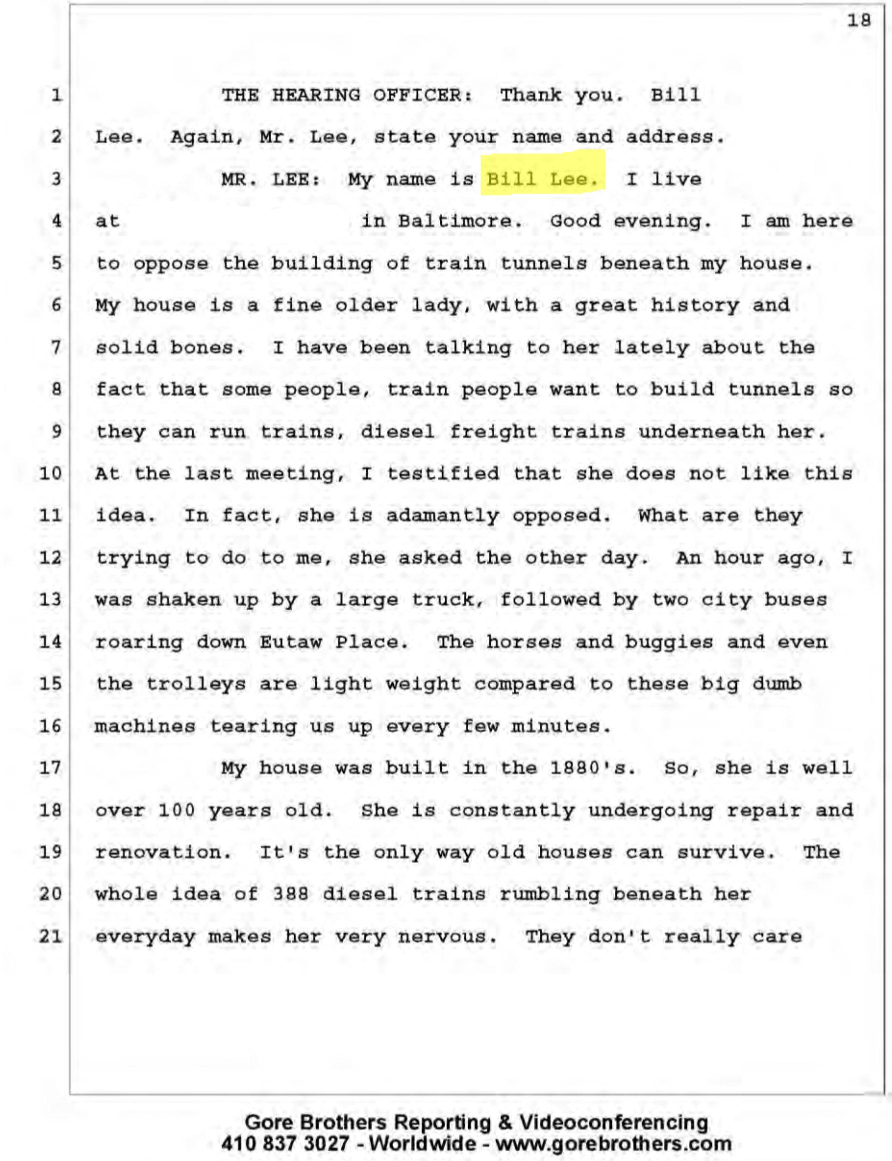
Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of

COMMENTS	**RESPONSES**
	alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative. Since the publication of the DEIS, Alternative 3B was selected as the Preferred Alternative. Alternative 3B was advanced through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the selection of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

COMMENTS

RESPONSES

DEIS Comment 143:



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THE HEARING OFFICER: Thank you. Bill Lee. Again, Mr. Lee, state your name and address.

MR. LEE: My name is Bill Lee. I live at in Baltimore. Good evening. I am here to oppose the building of train tunnels beneath my house. My house is a fine older lady, with a great history and solid bones. I have been talking to her lately about the fact that some people, train people want to build tunnels so they can run trains, diesel freight trains underneath her. At the last meeting, I testified that she does not like this idea. In fact, she is adamantly opposed. What are they trying to do to me, she asked the other day. An hour ago, I was shaken up by a large truck, followed by two city buses roaring down Eutaw Place. The horses and buggies and even the trolleys are light weight compared to these big dumb machines tearing us up every few minutes. 1

My house was built in the 1880's. So, she is well over 100 years old. She is constantly undergoing repair and renovation. It's the only way old houses can survive. The whole idea of 388 diesel trains rumbling beneath her everyday makes her very nervous. They don't really care

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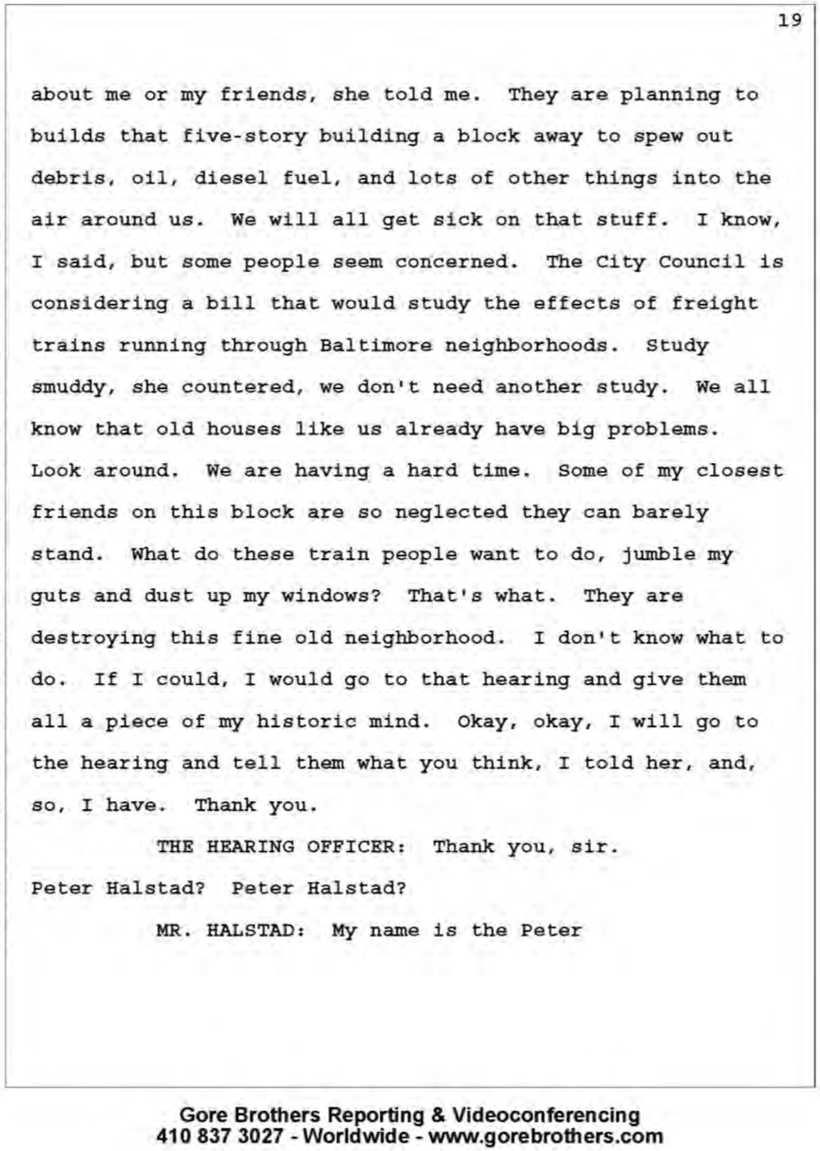
Response to Comment 1:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be compensated for the cost of repairs.

COMMENTS



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2 about me or my friends, she told me. They are planning to builds that five-story building a block away to spew out debris, oil, diesel fuel, and lots of other things into the air around us. We will all get sick on that stuff.

I know, I said, but some people seem concerned. The City Council is considering a bill that would study the effects of freight trains running through Baltimore neighborhoods. Study smuddy, she countered, we don't need another study. We all know that old houses like us already have big problems. Look around. We are having a hard time. Some of my closest

3 friends on this block are so neglected they can barely stand. What do these train people want to do, jumble my guts and dust up my windows? That's what. They are destroying this fine old neighborhood. I don't know what to do. If I could, I would go to that hearing and give them all a piece of my historic mind. Okay, okay, I will go to the hearing and tell them what you think, I told her, and, so, I have. Thank you.

THE HEARING OFFICER: Thank you, sir.
Peter Halstad? Peter Halstad?

MR. HALSTAD: My name is the Peter

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RESPONSES

Response to Comment 2:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

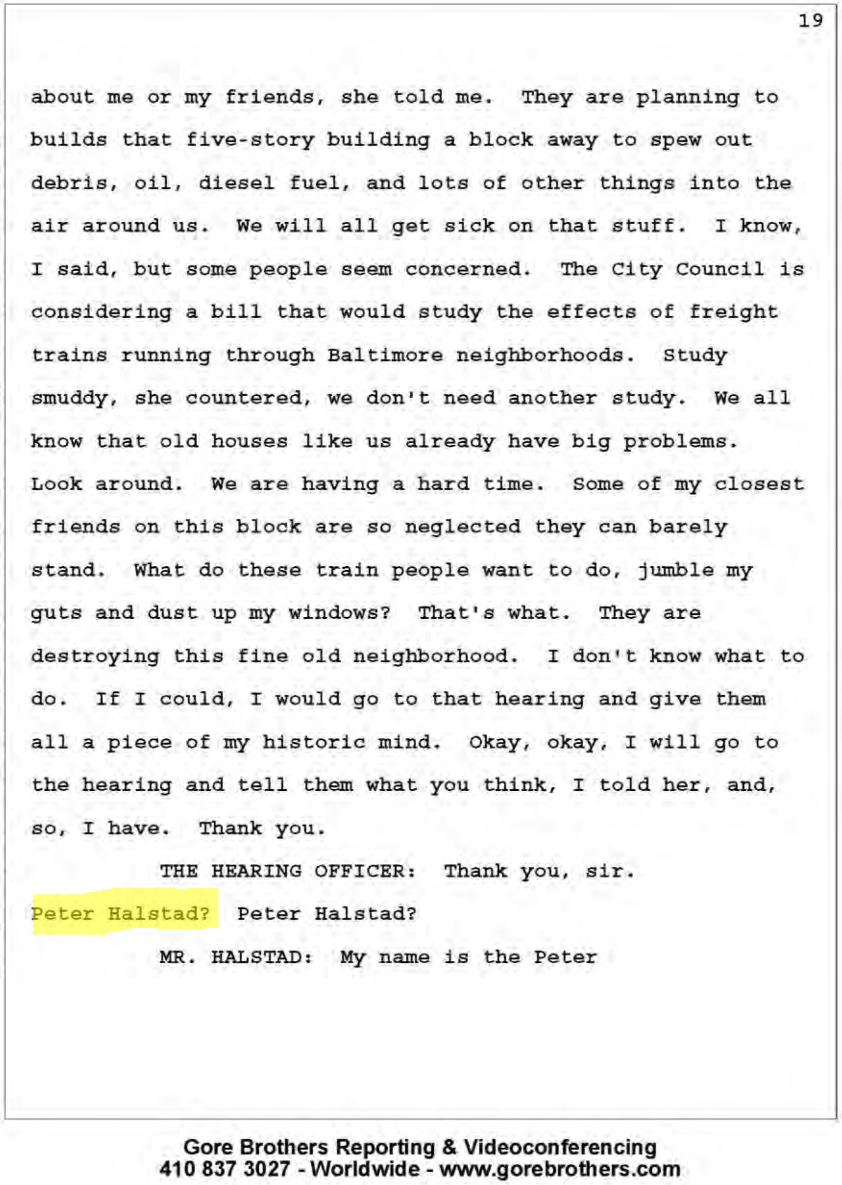
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

Response to Comment 3:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

COMMENTS

RESPONSES

DEIS Comment 144:

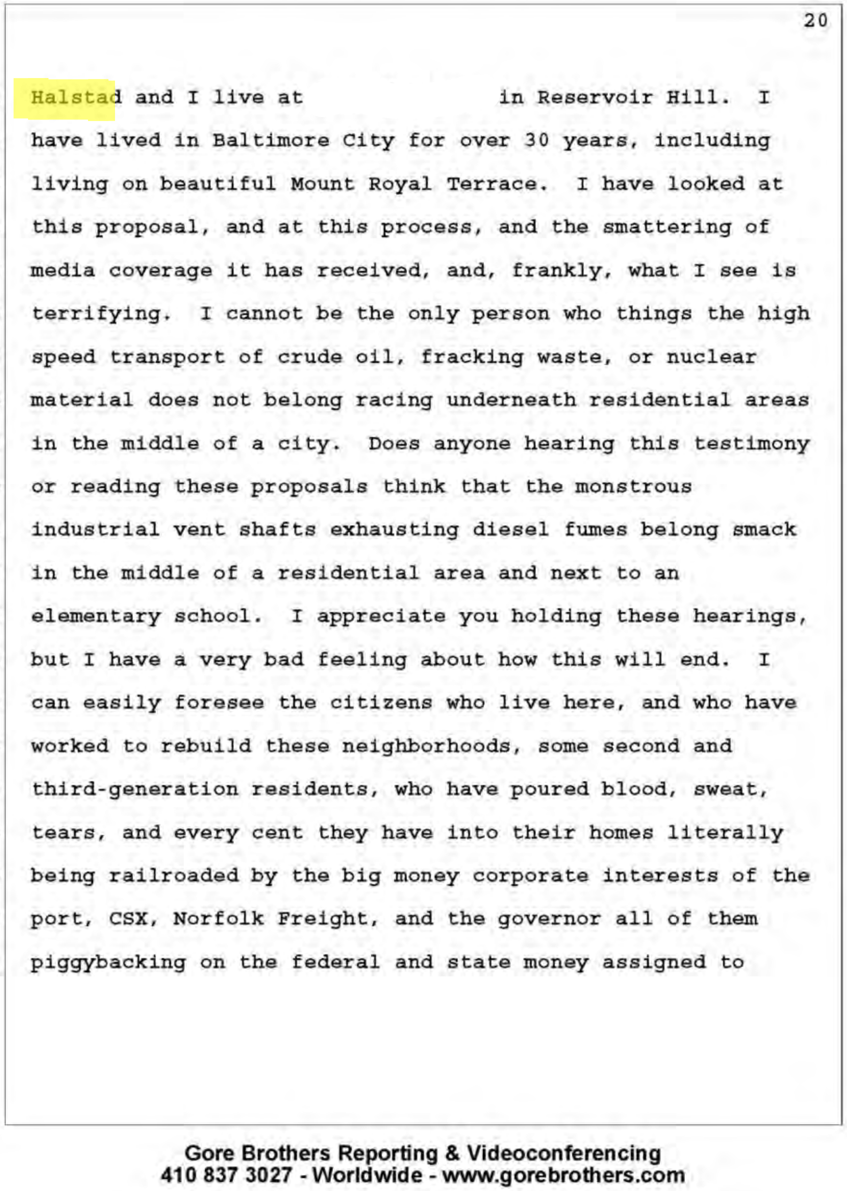


about me or my friends, she told me. They are planning to builds that five-story building a block away to spew out debris, oil, diesel fuel, and lots of other things into the air around us. We will all get sick on that stuff. I know, I said, but some people seem concerned. The City Council is considering a bill that would study the effects of freight trains running through Baltimore neighborhoods. Study smuddy, she countered, we don't need another study. We all know that old houses like us already have big problems. Look around. We are having a hard time. Some of my closest friends on this block are so neglected they can barely stand. What do these train people want to do, jumble my guts and dust up my windows? That's what. They are destroying this fine old neighborhood. I don't know what to do. If I could, I would go to that hearing and give them all a piece of my historic mind. Okay, okay, I will go to the hearing and tell them what you think, I told her, and, so, I have. Thank you.

THE HEARING OFFICER: Thank you, sir. Peter Halstad? Peter Halstad?

MR. HALSTAD: My name is the Peter

COMMENTS



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Halstad and I live at in Reservoir Hill. I have lived in Baltimore City for over 30 years, including living on beautiful Mount Royal Terrace. I have looked at this proposal, and at this process, and the smattering of media coverage it has received, and, frankly, what I see is terrifying.

1 I cannot be the only person who things the high speed transport of crude oil, fracking waste, or nuclear material does not belong racing underneath residential areas in the middle of a city.

Does anyone hearing this testimony or reading these proposals think that the monstrous

2 industrial vent shafts exhausting diesel fumes belong smack in the middle of a residential area and next to an elementary school.

I appreciate you holding these hearings, but I have a very bad feeling about how this will end. I can easily foresee the citizens who live here, and who have worked to rebuild these neighborhoods, some second and third-generation residents, who have poured blood, sweat, tears, and every cent they have into their homes literally being railroaded by the big money corporate interests of the port, CSX, Norfolk Freight, and the governor all of them piggybacking on the federal and state money assigned to

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RESPONSES

Response to Comment 1:
Norfolk Southern has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

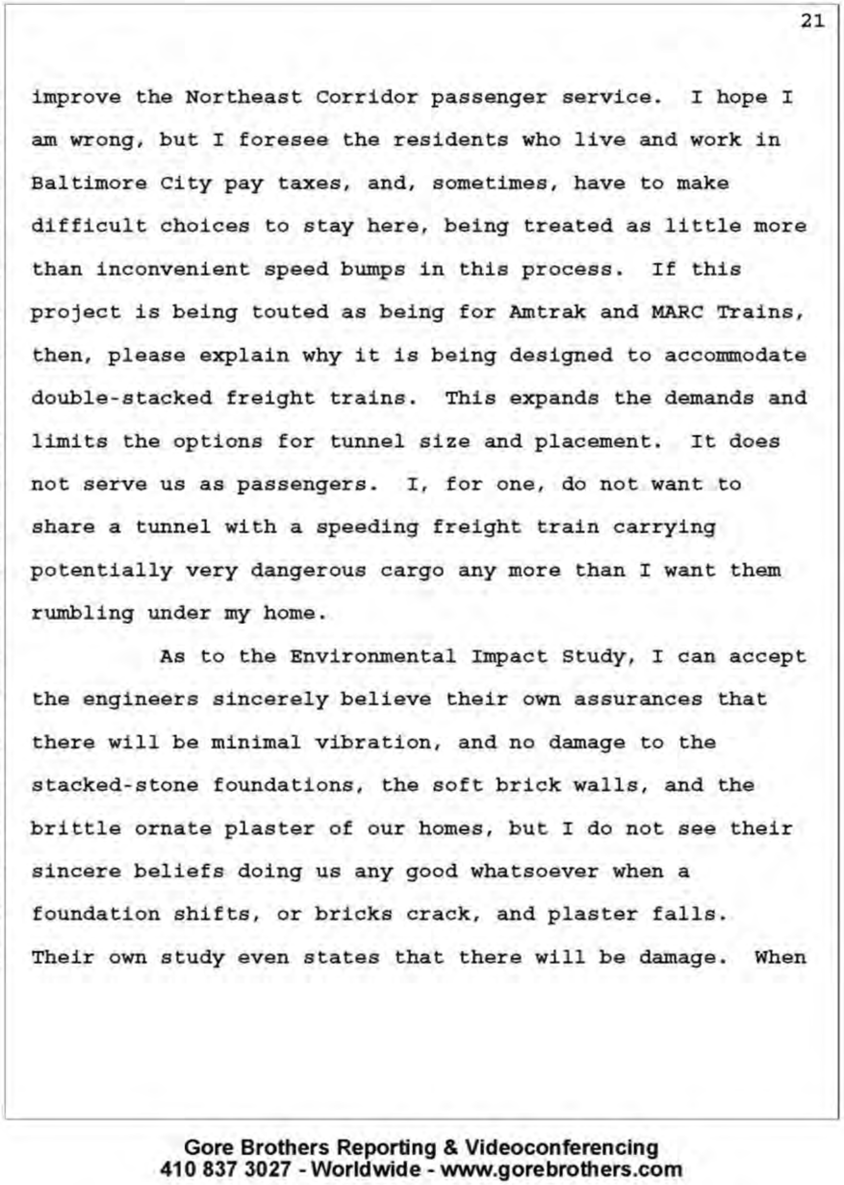
FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

The number of variables involved makes it virtually impossible to accurately forecast freight usage through the tunnel. Therefore, due to low probability of new freight customers and the high cost of interconnecting freight lines with the NEC, Amtrak anticipates that the number of freight trains using the new tunnel will remain unchanged for the foreseeable future.

The tunnel will be equipped with Automatic Train Control (ATC) and Positive Train Control (PTC) systems, which use computer systems to control the speed of both passenger and freight trains within the tunnel.

Response to Comment 2:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and

COMMENTS



improve the Northeast Corridor passenger service. I hope I
am wrong, but I foresee the residents who live and work in
3 Baltimore City pay taxes, and, sometimes, have to make
difficult choices to stay here, being treated as little more
than inconvenient speed bumps in this process. If this
project is being touted as being for Amtrak and MARC Trains,
then, please explain why it is being designed to accommodate
4 double-stacked freight trains. This expands the demands and
limits the options for tunnel size and placement. It does
not serve us as passengers. I, for one, do not want to
share a tunnel with a speeding freight train carrying
potentially very dangerous cargo any more than I want them
rumbling under my home.

As to the Environmental Impact Study, I can accept
the engineers sincerely believe their own assurances that
there will be minimal vibration, and no damage to the
5 stacked-stone foundations, the soft brick walls, and the
brittle ornate plaster of our homes, but I do not see their
sincere beliefs doing us any good whatsoever when a
foundation shifts, or bricks crack, and plaster falls.
Their own study even states that there will be damage. When

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RESPONSES

individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

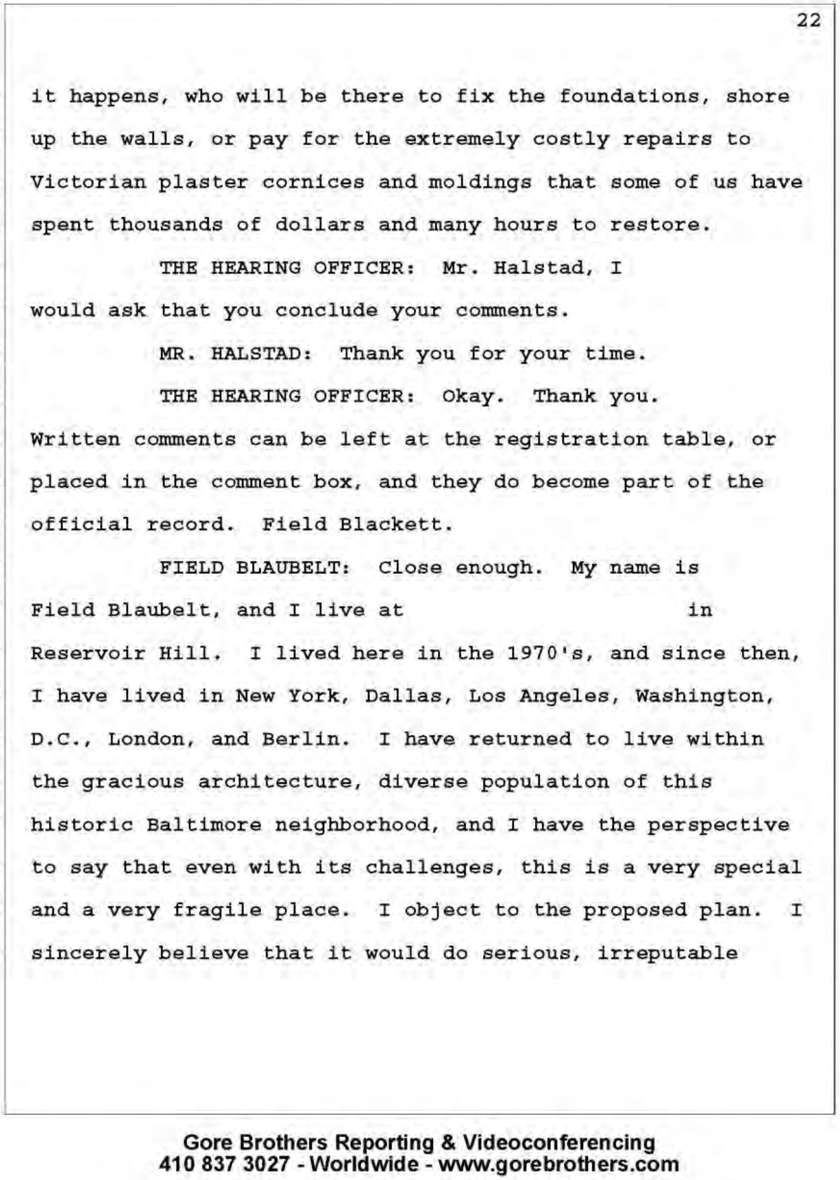
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

Response to Comment 3:
The Project Team has engaged the community in extensive public outreach throughout the development of the project including three Public Open Houses, as well as 10 community meetings where the public was given the opportunity to learn about the project development in-person and directly ask questions and engage in discussion with the Project Team. In addition to these meetings, Mitigation Working Groups comprising community organization representatives and members of the Project Team were established to determine the most effective mitigation for the Project. Details of this outreach are described in **Chapter VI** as well as **Chapter VIII.**

Response to Comment 4:
Amtrak design practices require new NEC infrastructure meet current standards, including Plate H (double stack) clearances. However, the new tunnel could not be used by double stack freight trains unless certain factors are met. These factors include:

- Substantial improvements, such as extensive additional vertical clearance improvements north and south of the B&P Tunnel to other NEC infrastructure; these improvements are not being designed as part of the B&P Project;
- Federal, state, local and regional support for aforementioned improvements including funding and policy;
- Increasing the bridge and catenary clearance on the NEC where double stack/high dimension trains are to travel;
- Construction of new or modified Union tunnel to Plate H/K (double stack) clearances; without a high dimension Union tunnel, double stack freight service using the B&P Tunnel is not possible;
- NS currently favors the Harrisburg-Perryville route for intermodal service;
- Freight schedules limited to off peak/night time periods which affects the scheduling flexibility and transit time for high priority (Intermodal) shipments for which time is absolutely critical; and
- Construction of track connection/s between the CSX and the NEC if CSX chooses to use the NEC.

COMMENTS



6 it happens, who will be there to fix the foundations, shore up the walls, or pay for the extremely costly repairs to Victorian plaster cornices and moldings that some of us have spent thousands of dollars and many hours to restore.

THE HEARING OFFICER: Mr. Halstad, I would ask that you conclude your comments.

MR. HALSTAD: Thank you for your time.

THE HEARING OFFICER: Okay. Thank you. Written comments can be left at the registration table, or placed in the comment box, and they do become part of the official record. Field Blackett.

FIELD BLAUBELT: Close enough. My name is Field Blaubelt, and I live at in Reservoir Hill. I lived here in the 1970's, and since then, I have lived in New York, Dallas, Los Angeles, Washington, D.C., London, and Berlin. I have returned to live within the gracious architecture, diverse population of this historic Baltimore neighborhood, and I have the perspective to say that even with its challenges, this is a very special and a very fragile place. I object to the proposed plan. I sincerely believe that it would do serious, irreputable

RESPONSES

In the short-term, there is no indication of any significant increase in freight movements through the B&P Tunnel.

CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the B&P Tunnel Project.

Amtrak's first priority is to its passenger services. Therefore, although Amtrak must accommodate requests from NS or other freight operators with trackage rights agreements for additional train moves on the NEC, Amtrak need only schedule such moves as space between passenger trains can be made available. Where the freight operator and Amtrak have a dispute about scheduling of freight moves, the Surface Transportation Board (STB) adjudicates trackage rights agreements.

Response to Comment 5:
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using analysis procedures from the *FTA Transit Noise and Vibration Impact Assessment.* Construction vibration levels were also evaluated using both FTA guidelines and standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

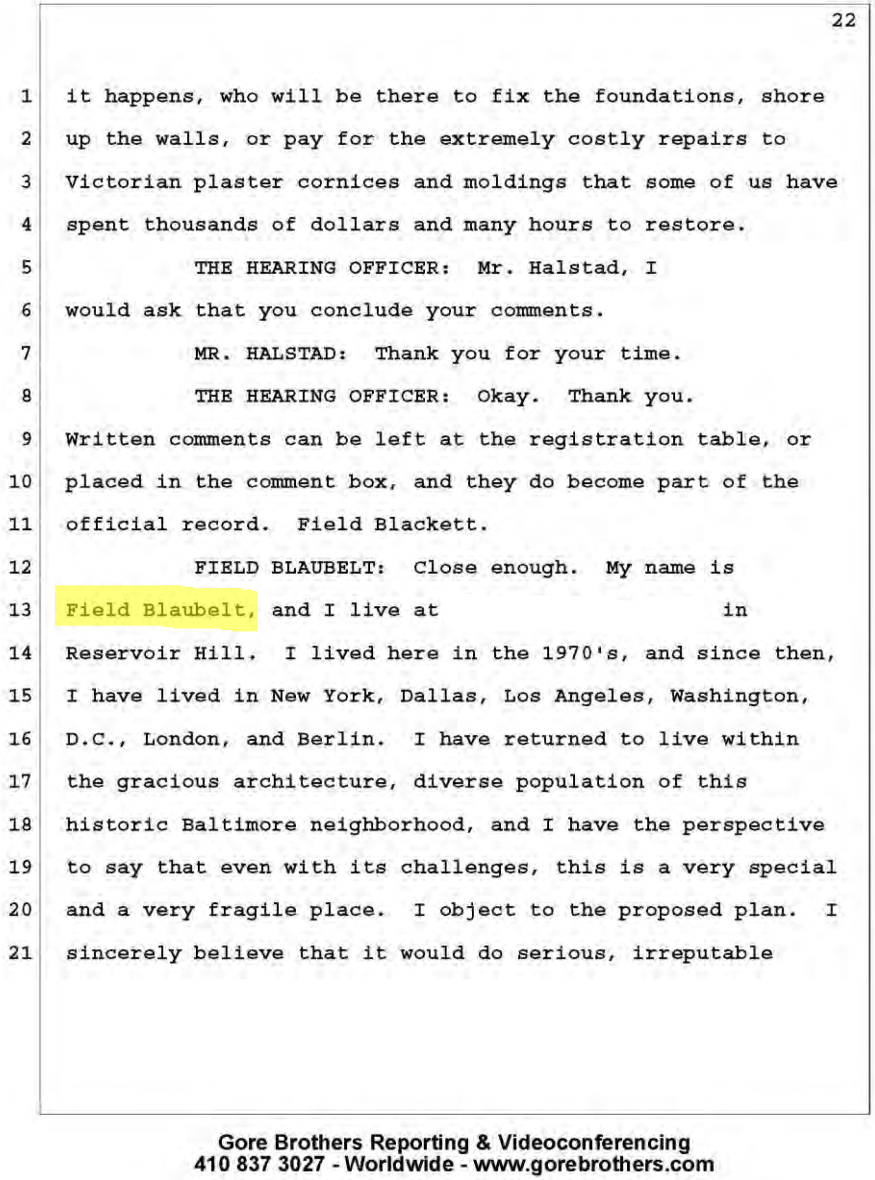
Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

COMMENTS	RESPONSES
	Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold. All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI**. **Response to Comment 6:** The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

COMMENTS

RESPONSES

DEIS Comment 145:



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it happens, who will be there to fix the foundations, shore up the walls, or pay for the extremely costly repairs to Victorian plaster cornices and moldings that some of us have spent thousands of dollars and many hours to restore.

THE HEARING OFFICER: Mr. Halstad, I would ask that you conclude your comments.

MR. HALSTAD: Thank you for your time.

THE HEARING OFFICER: Okay. Thank you. Written comments can be left at the registration table, or placed in the comment box, and they do become part of the official record. Field Blackett.

FIELD BLAUBELT: Close enough. My name is Field Blaubelt, and I live at in Reservoir Hill. I lived here in the 1970's, and since then, I have lived in New York, Dallas, Los Angeles, Washington, D.C., London, and Berlin. I have returned to live within the gracious architecture, diverse population of this historic Baltimore neighborhood, and I have the perspective to say that even with its challenges, this is a very special and a very fragile place. I object to the proposed plan. I sincerely believe that it would do serious, irreputable

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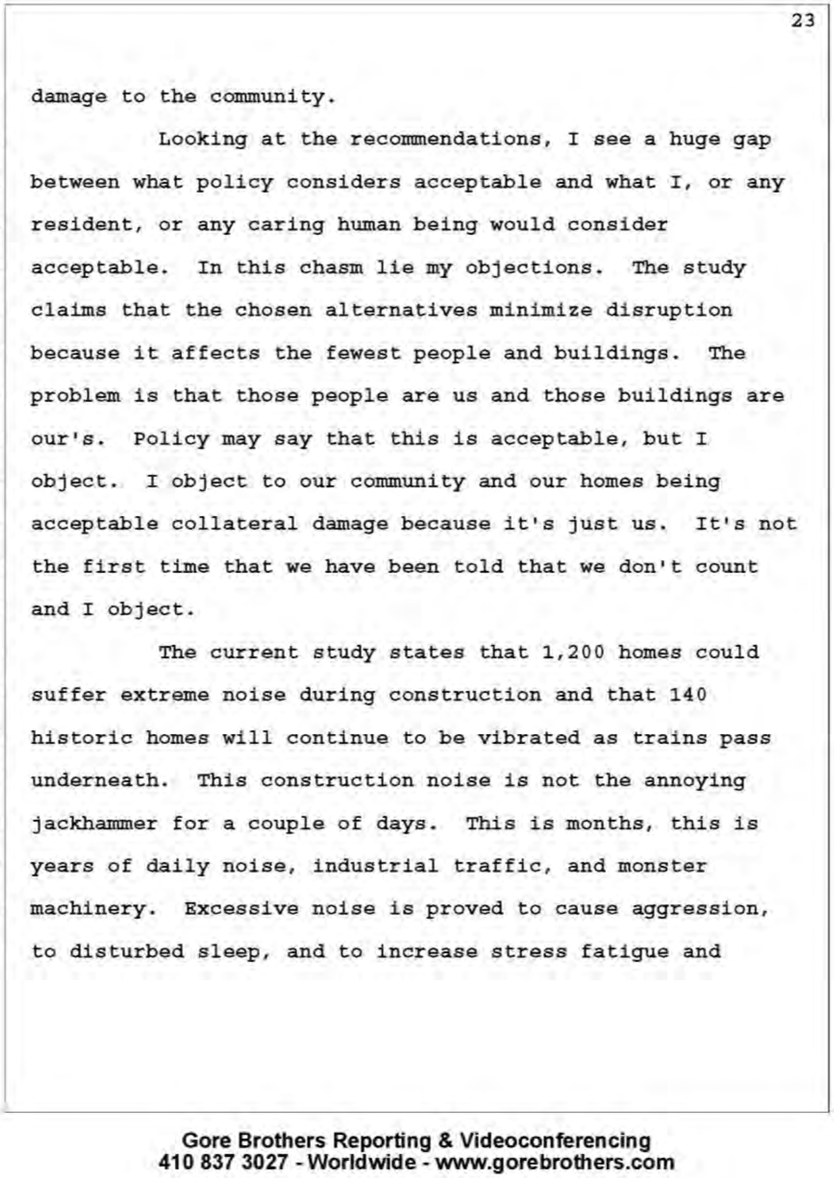
COMMENTS



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damage to the community.

1 Looking at the recommendations, I see a huge gap between what policy considers acceptable and what I, or any resident, or any caring human being would consider acceptable. In this chasm lie my objections. The study claims that the chosen alternatives minimize disruption because it affects the fewest people and buildings. The problem is that those people are us and those buildings are our's. Policy may say that this is acceptable, but I object. I object to our community and our homes being acceptable collateral damage because it's just us. It's not the first time that we have been told that we don't count and I object.

2 The current study states that 1,200 homes could suffer extreme noise during construction and that 140 historic homes will continue to be vibrated as trains pass underneath. This construction noise is not the annoying jackhammer for a couple of days. This is months, this is years of daily noise, industrial traffic, and monster machinery. Excessive noise is proved to cause aggression, to disturbed sleep, and to increase stress fatigue and

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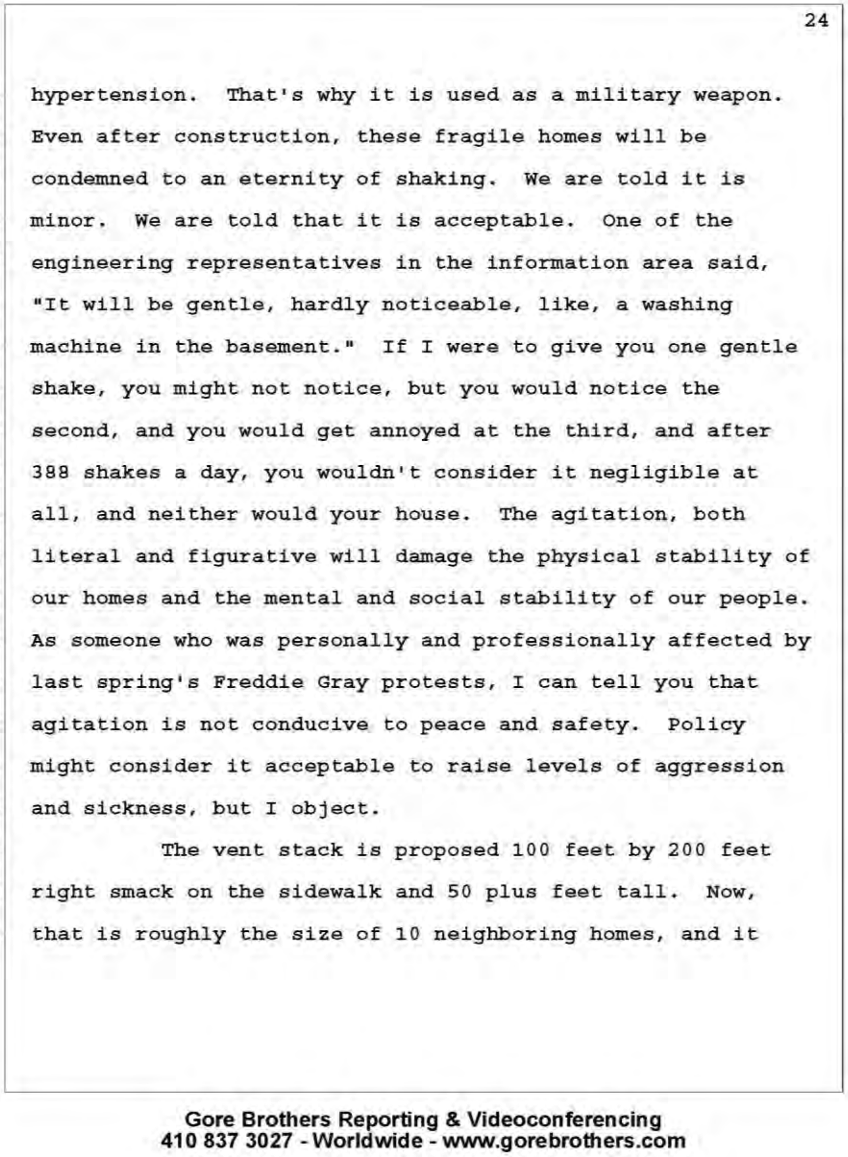
RESPONSES

Response to Comment 1:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

The Preferred Alternative would displace 22 residential buildings in the Midtown-Edmondson neighborhood, Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings. Executive Order 12898 requires federal agencies to ensure effective, meaningful involvement of low-income and minority populations in project planning and development, and potentially affected EJ populations have fair and equal access to information. The Project Team has engaged in extensive public outreach throughout the development of the Project, including three public open houses and ten community meetings. In addition to these meetings, Mitigation Working Groups comprised of community organization representatives and members of the Project Team were established to determine the most effective mitigation for the Project. Details of this outreach are described in **Chapter VI** and **Chapter VIII**.

Response to Comment 2:
Alternative 3A is estimated to have 254 Moderate noise impacts, Alternative 3 B is estimated to have 141 Severe and 296 Moderate noise impacts, and Alternative 3C is estimated to have 111 Severe and 979 Moderate noise impacts. The severe impacts were predicted at residential areas nearest the railroad between the West Baltimore station and the south portal. The duration of the construction period will be six years; 2020 to 2025. Measures will be implemented to lessen noise during construction, which could potentially include erection of temporary walls or earth berms between the noise source and the sensitive receptor, the identification of haul routes that avoid sensitive receptors to the maximum extent possible, and location of stationary noise generating equipment at a distance from sensitive receptors. In addition, construction activities can be planned to avoid prolonged noise generating activities and to minimize construction activities during the most sensitive time of day or night. **Chapter VI** of this FEIS further details noise construction mitigation.

COMMENTS



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3 hypertension. That's why it is used as a military weapon. Even after construction, these fragile homes will be condemned to an eternity of shaking. We are told it is minor. We are told that it is acceptable. One of the engineering representatives in the information area said, "It will be gentle, hardly noticeable, like, a washing machine in the basement." If I were to give you one gentle shake, you might not notice, but you would notice the second, and you would get annoyed at the third, and after 388 shakes a day, you wouldn't consider it negligible at all, and neither would your house. The agitation, both literal and figurative will damage the physical stability of our homes and the mental and social stability of our people. As someone who was personally and professionally affected by last spring's Freddie Gray protests, I can tell you that agitation is not conducive to peace and safety. Policy might consider it acceptable to raise levels of aggression and sickness, but I object.

4 The vent stack is proposed 100 feet by 200 feet right smack on the sidewalk and 50 plus feet tall. Now, that is roughly the size of 10 neighboring homes, and it

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RESPONSES

Response to Comment 3:
A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

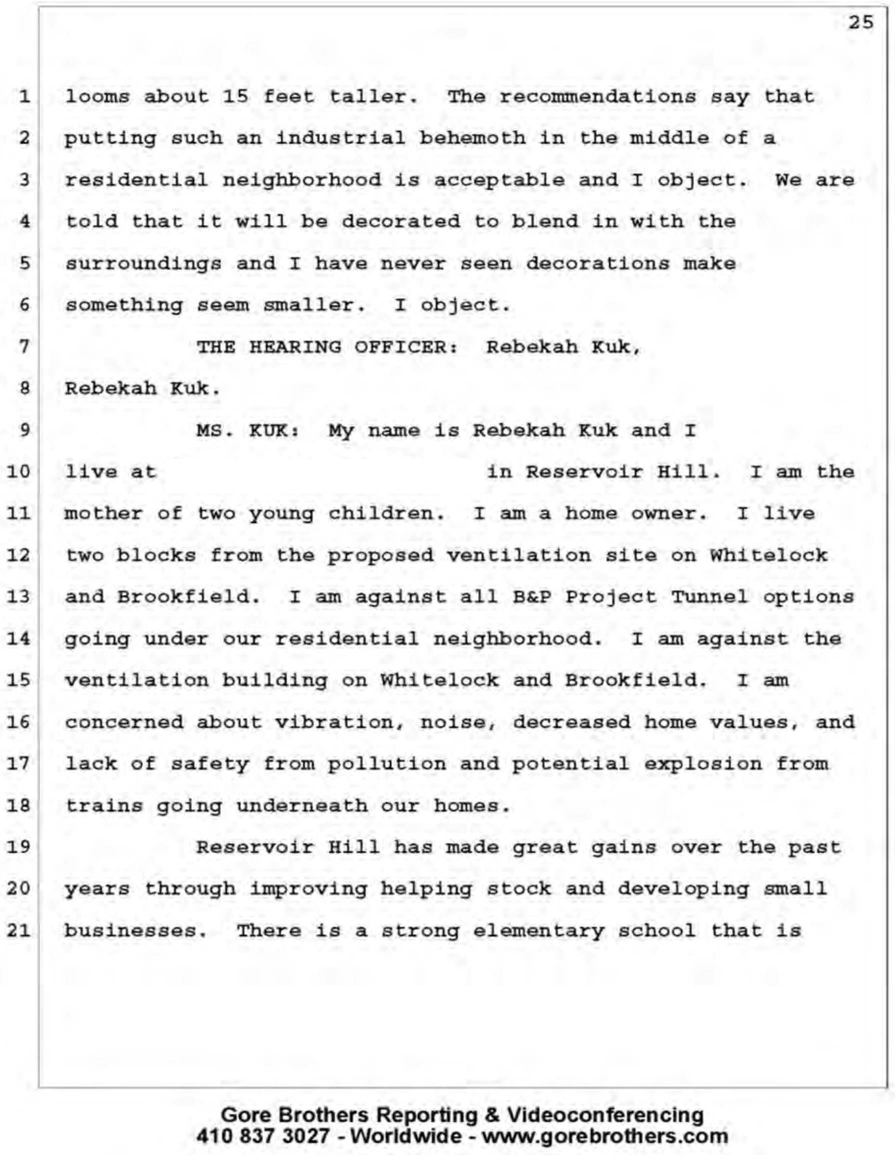
Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA 'frequent' impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

COMMENTS



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looms about 15 feet taller. The recommendations say that putting such an industrial behemoth in the middle of a residential neighborhood is acceptable and I object. We are told that it will be decorated to blend in with the surroundings and I have never seen decorations make something seem smaller. I object.

THE HEARING OFFICER: Rebekah Kuk, Rebekah Kuk.

MS. KUK: My name is Rebekah Kuk and I live at in Reservoir Hill. I am the mother of two young children. I am a home owner. I live two blocks from the proposed ventilation site on Whitelock and Brookfield. I am against all B&P Project Tunnel options going under our residential neighborhood. I am against the ventilation building on Whitelock and Brookfield. I am concerned about vibration, noise, decreased home values, and lack of safety from pollution and potential explosion from trains going underneath our homes.

Reservoir Hill has made great gains over the past years through improving helping stock and developing small businesses. There is a strong elementary school that is

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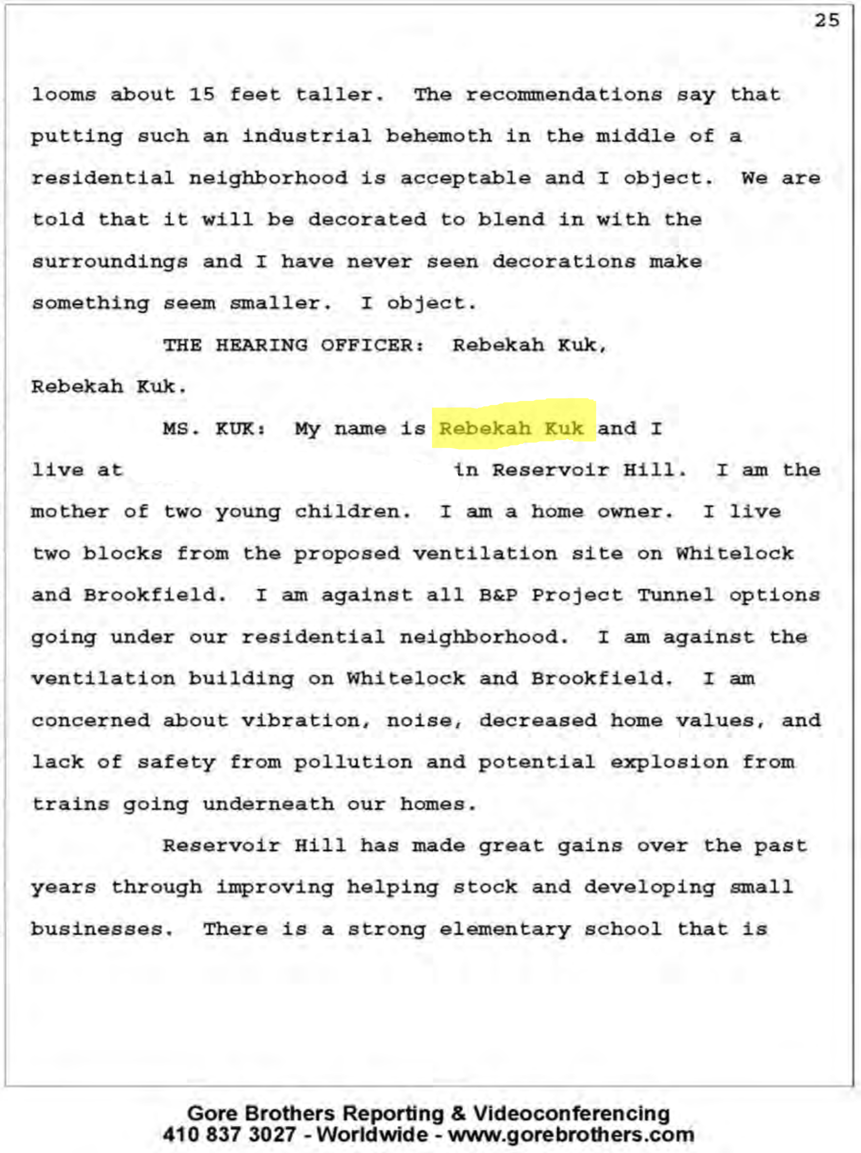
RESPONSES

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

Response to Comment 4:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

DEIS Comment 146:



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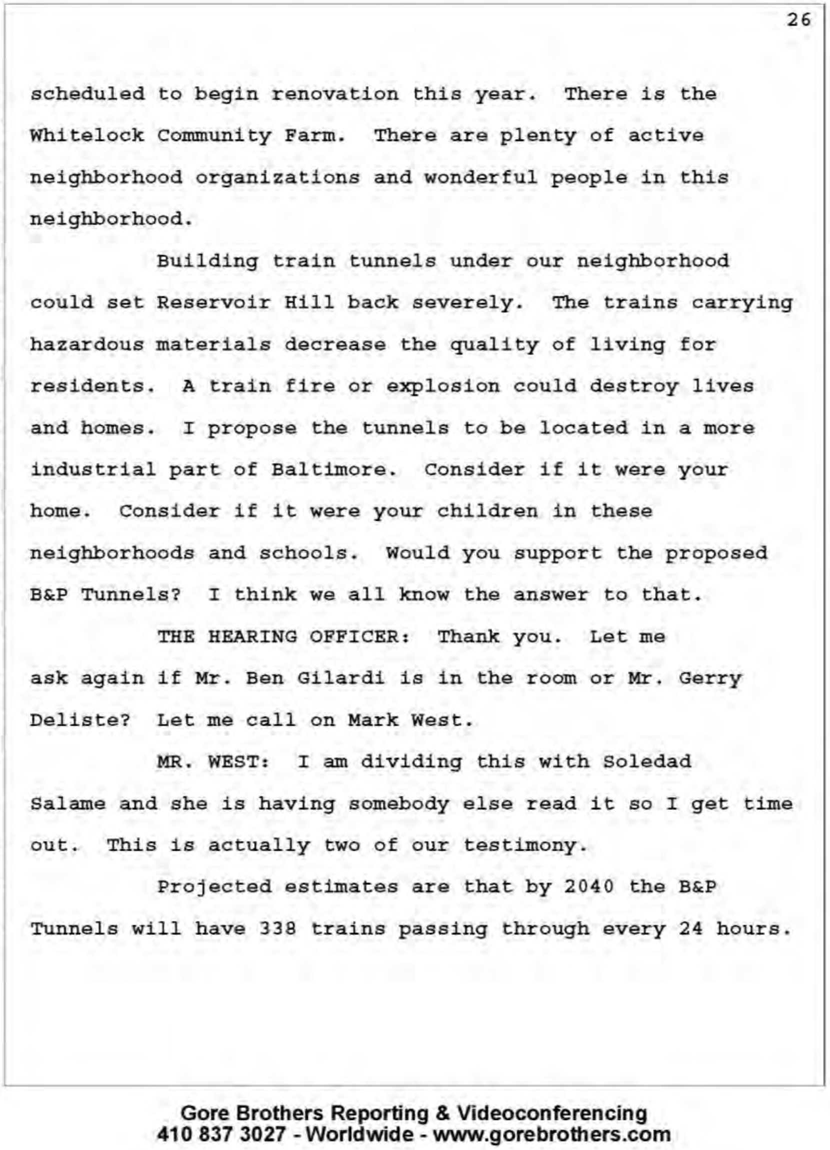
COMMENTS



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scheduled to begin renovation this year. There is the Whitelock Community Farm. There are plenty of active neighborhood organizations and wonderful people in this neighborhood.

3 Building train tunnels under our neighborhood could set Reservoir Hill back severely. The trains carrying hazardous materials decrease the quality of living for residents. A train fire or explosion could destroy lives and homes. I propose the tunnels to be located in a more industrial part of Baltimore. Consider if it were your home. Consider if it were your children in these neighborhoods and schools. Would you support the proposed B&P Tunnels? I think we all know the answer to that.

THE HEARING OFFICER: Thank you. Let me ask again if Mr. Ben Gilardi is in the room or Mr. Gerry Deliste? Let me call on Mark West.

MR. WEST: I am dividing this with Soledad Salame and she is having somebody else read it so I get time out. This is actually two of our testimony.

Projected estimates are that by 2040 the B&P Tunnels will have 338 trains passing through every 24 hours.

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RESPONSES

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

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Regarding home values, the economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am to 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm

COMMENTS	RESPONSES

to 3:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**.

Trains are among the safest form of transportation available on an accident per passenger-mile basis. In the unlikely event of an accident, local responders receive training for a variety of incidents related to specific facilities, including the B&P Tunnel. The tunnel would be constructed to meet current standards for fire protection. Additionally, the Project sponsor will develop and implement a Hazardous Spill Prevention Plan and a Hazardous Materials Remediation Plan, as well as an Emergency Management Plan to be implemented in the event of a tunnel emergency.

Response to Comment 3:
Norfolk Southern has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

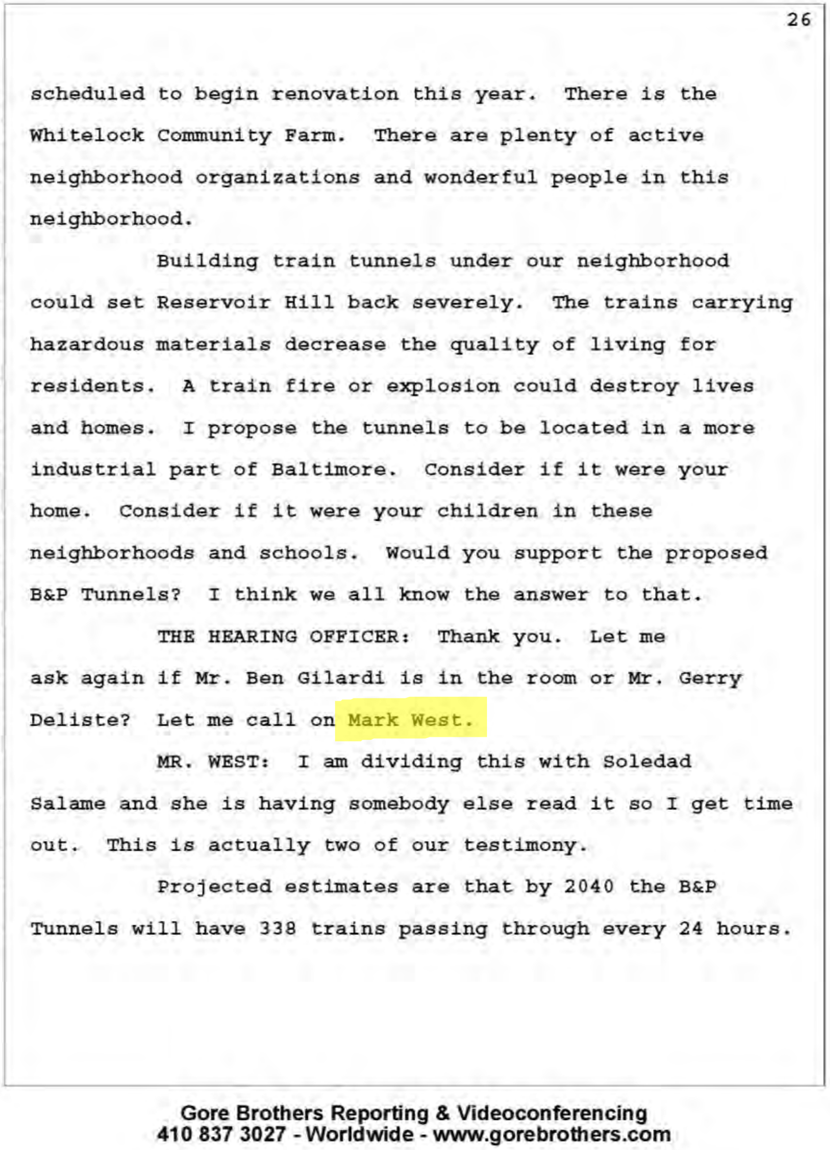
> *Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.*

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

COMMENTS

RESPONSES

DEIS Comment 147:



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Projected estimates are that by 2040 the B&P Tunnels will have 338 trains passing through every 24 hours.

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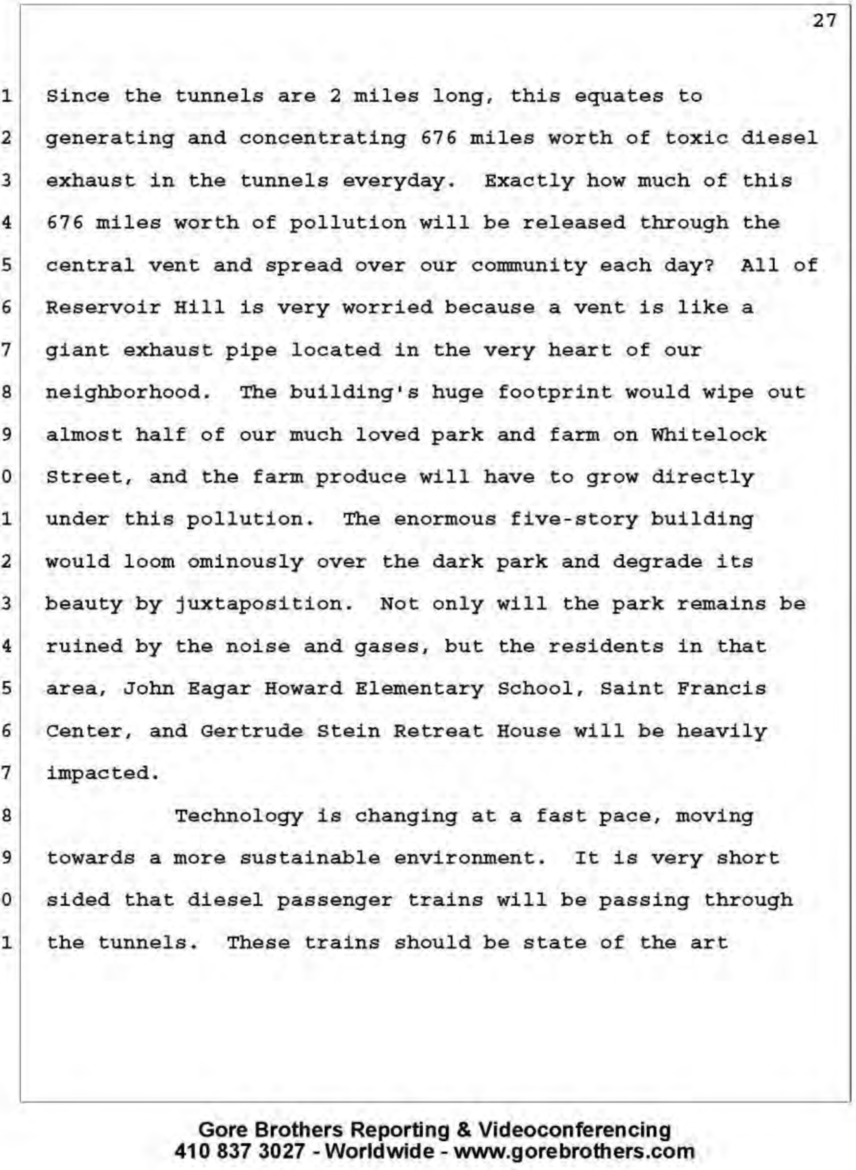
COMMENTS



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Since the tunnels are 2 miles long, this equates to
generating and concentrating 676 miles worth of toxic diesel
exhaust in the tunnels everyday. Exactly how much of this
676 miles worth of pollution will be released through the
1 central vent and spread over our community each day? All of
Reservoir Hill is very worried because a vent is like a
giant exhaust pipe located in the very heart of our
neighborhood. The building's huge footprint would wipe out
almost half of our much loved park and farm on Whitelock
Street, and the farm produce will have to grow directly
2 under this pollution. The enormous five-story building
would loom ominously over the dark park and degrade its
beauty by juxtaposition. Not only will the park remains be
ruined by the noise and gases, but the residents in that
area, John Eagar Howard Elementary School, Saint Francis
Center, and Gertrude Stein Retreat House will be heavily
impacted.

3 Technology is changing at a fast pace, moving
towards a more sustainable environment. It is very short
sided that diesel passenger trains will be passing through
the tunnels. These trains should be state of the art

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RESPONSES

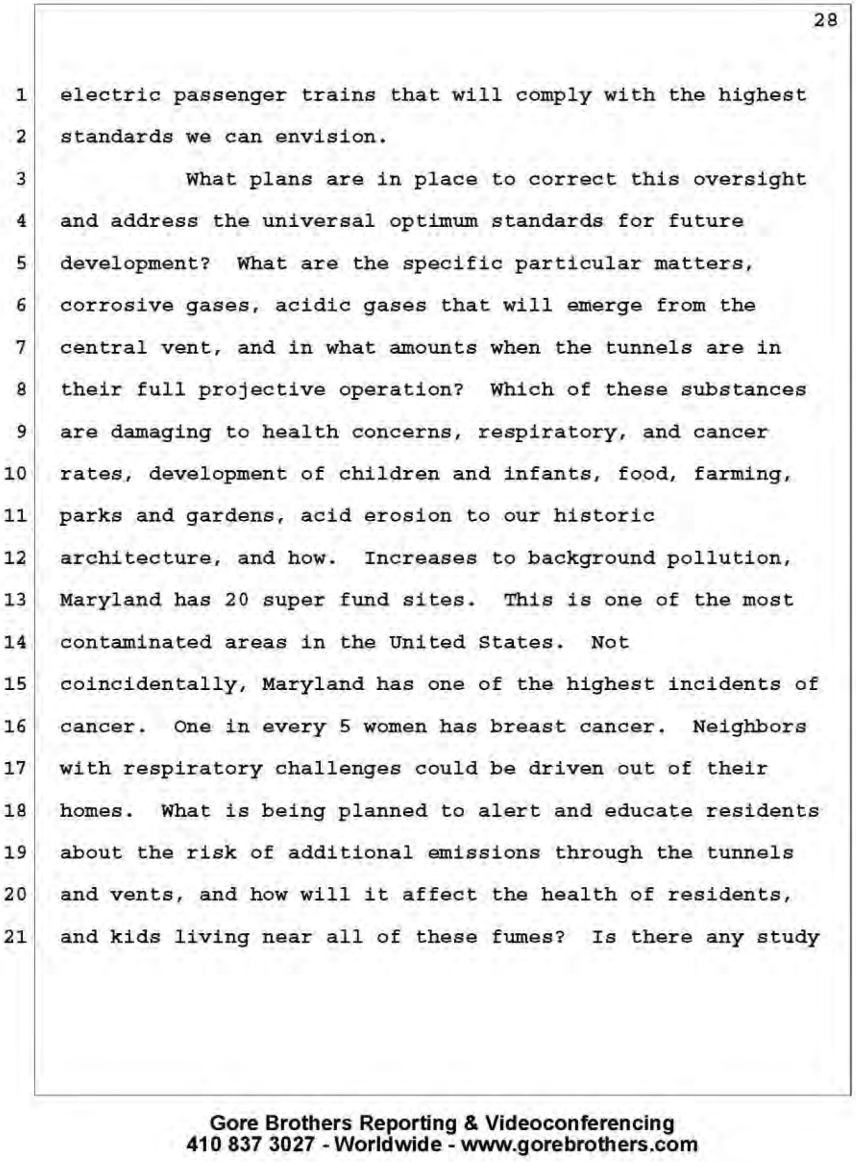
Response to Comment 1:
Regarding diesel emissions, when NO$_2$ levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO$_2$.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO$_2$ emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am to 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO$_2$ concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**.

The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO$_2$ concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO$_2$ were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

Response to Comment 2:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS



electric passenger trains that will comply with the highest standards we can envision.

4 What plans are in place to correct this oversight and address the universal optimum standards for future development? What are the specific particular matters, corrosive gases, acidic gases that will emerge from the central vent, and in what amounts when the tunnels are in their full projective operation? Which of these substances are damaging to health concerns, respiratory, and cancer rates, development of children and infants, food, farming, parks and gardens, acid erosion to our historic architecture, and how. Increases to background pollution, Maryland has 20 super fund sites. This is one of the most contaminated areas in the United States. Not coincidentally, Maryland has one of the highest incidents of 5 cancer. One in every 5 women has breast cancer. Neighbors with respiratory challenges could be driven out of their homes. What is being planned to alert and educate residents about the risk of additional emissions through the tunnels and vents, and how will it affect the health of residents, and kids living near all of these fumes? Is there any study

RESPONSES

Response to Comment 3:
The type of locomotive traveling through the tunnel is determined by the train service operator. As per the 2040 projections, of the 388 daily vehicles running through the Tunnel, 222 will be electric (Acela, NE Regional, and Metropolitan), and 166 will be diesel (2 freight and 164 MARC). Please refer to **Chapter VI** for additional information.

Response to Comment 4:
Analysis of ventilation facility emissions included an air dispersion modeling analysis, which followed the latest US Environmental Protection Agency modeling guidelines for predicting air quality effects for regulated pollutants. The results of the analysis were compared to the stringent 1- hour NO_2 National Ambient Air Quality Standards (NAAQS) of 100 parts per billion (ppb) as opposed to the annual standard of 53 ppb. Emission studies have demonstrated that if NO_2 concentrations are maintained within acceptable levels, then other pollutant concentrations associated with diesel exhaust emissions will also be within acceptable limits. The maximum predicted 1-hour NO_2 concentration from the three ventilation facilities as well as north and south portals was 12.8 ppb. When added to the NO_2 background concentration of 51 ppb, the total predicted 1-hour concentration amounted to 63.8 ppb, which is below the NAAQS of 100 ppb. The maximum predicted 1-hour NO_2 concentration of the Intermediate Ventilation Facility is 2.9 ppb and when combined with NO_2 background concentration of 51 ppb the total NO_2 concentration would be 53.9 ppb, below the NAAQS threshold limits of 100 ppb.

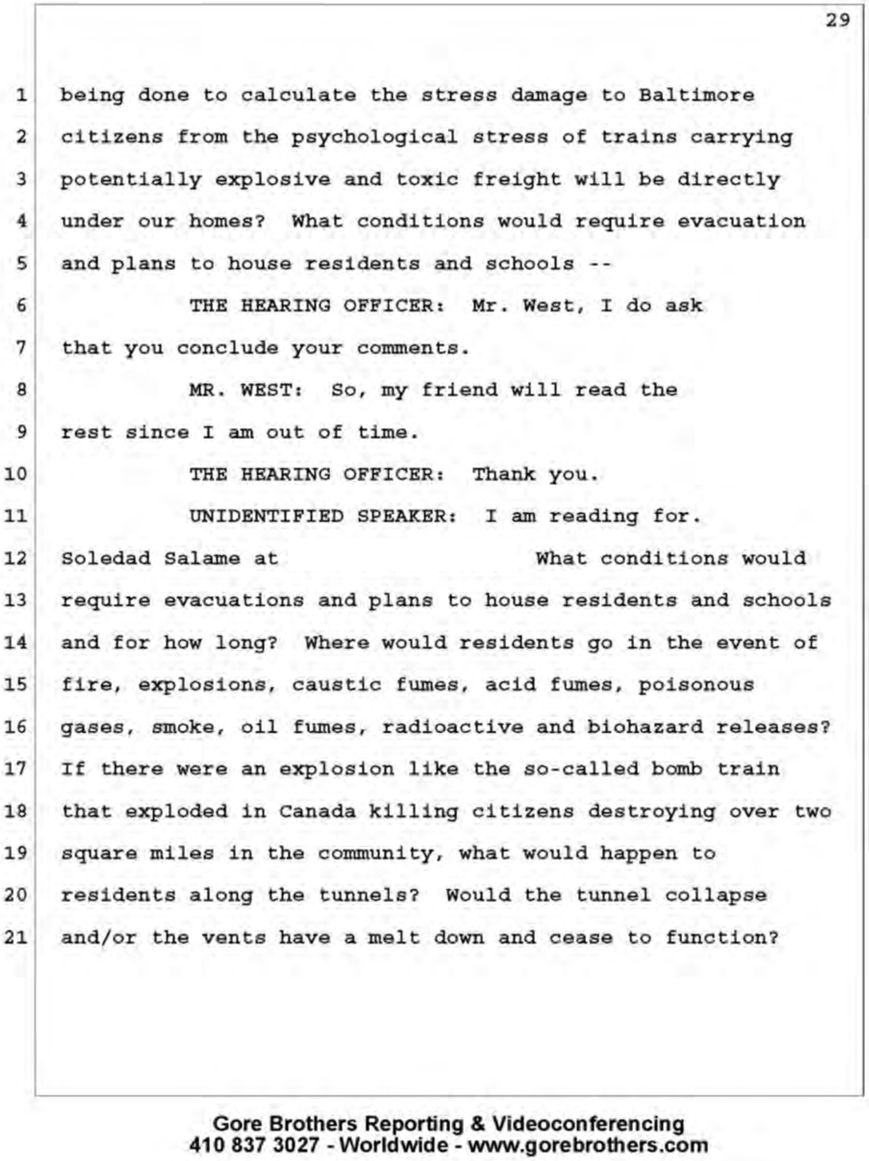
Response to Comment 5:
The Project meets air quality standards; therefore, public alerts regarding emissions will not be required.

Please refer to **Chapter VI** for issues pertaining to public health.

No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns

Children's Health was assessed for Air Quality, Water, Soil and Hazardous Material and is described in **Chapter VI** of this FEIS. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA. No sole source aquifers, active water supply reservoirs,

COMMENTS



being done to calculate the stress damage to Baltimore citizens from the psychological stress of trains carrying potentially explosive and toxic freight will be directly under our homes? What conditions would require evacuation and plans to house residents and schools --

THE HEARING OFFICER: Mr. West, I do ask that you conclude your comments.

MR. WEST: So, my friend will read the rest since I am out of time.

THE HEARING OFFICER: Thank you.

UNIDENTIFIED SPEAKER: I am reading for. Soledad Salame at What conditions would require evacuations and plans to house residents and schools and for how long? Where would residents go in the event of fire, explosions, caustic fumes, acid fumes, poisonous gases, smoke, oil fumes, radioactive and biohazard releases? If there were an explosion like the so-called bomb train that exploded in Canada killing citizens destroying over two square miles in the community, what would happen to residents along the tunnels? Would the tunnel collapse and/or the vents have a melt down and cease to function?

RESPONSES

or wells are located near the Project. The Project will have no impact to potable water. Under the Preferred Alternative, 112 sites of concern were identified within 1 mile of the alignment; once type and extent of contamination and details of construction are known, potential risk and exposure can be assessed and appropriate documentation in place.

The Project would design and implement vertically-oriented fans at ventilation facilities to facilitate dispersion and avoid violation of air quality regulations. For information regarding mitigation measures, please see **Chapter VII**.

To prevent accidents and fires, FRA requires a range of measures that minimize the risk to the public, including emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. The build alternatives would be designed and constructed in compliance with all current standards relative to Fire Life and Safety, which includes compliance with the National Fire Protection Association (NFPA).

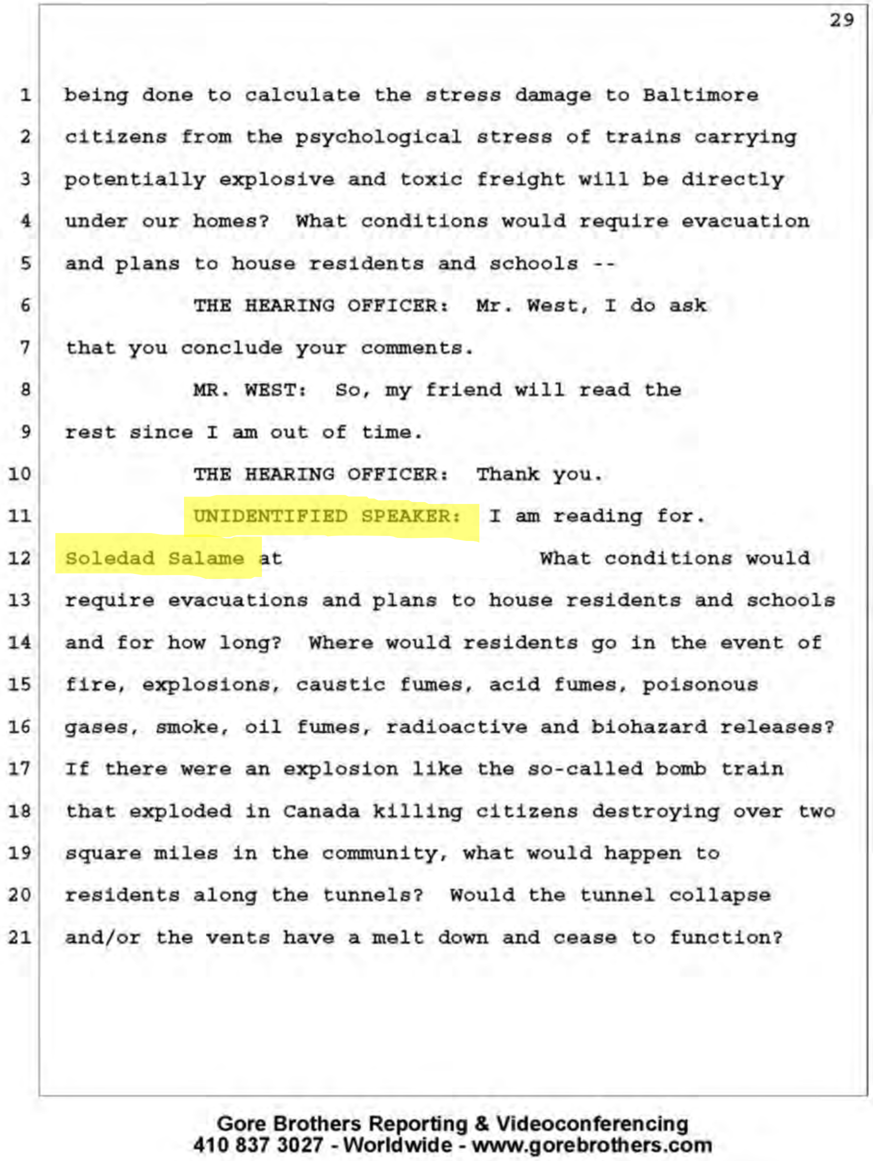
The ventilation facilities would be an essential Life/Safety component of the build alternatives, beyond their function of providing emergency access/egress for the tunnels. The ventilation facilities would include an above-ground structure housing fans and ancillary equipment, operations and control equipment, fire protection equipment, and silencers and dampers. In the unlikely event of a fire, smoke could emerge from the vents, as is the case with any structural fire. The ventilation facilities and fans are built so that smoke emerging from the Tunnel would be projected up and away from the community. In the very rare event of a tunnel fire, the path from a tunnel fire to the exhaust louvers is long and circuitous, with many bends that reduce the ability of particles to travel through the fans and louvers.

The tunnel would be constructed to meet current standards for fire protection. Emergency access/egress for pedestrians would be accomplished via emergency exits no farther than 2,500 feet apart or cross-passages between tunnels every 800 feet or less, or in some situations, a combination of both. For the Preferred Alternative, three locations would be provided for emergency egress to the surface, working with cross-passages in the tunnels. The emergency egress to ground level would be provided at the south portal Ventilation Facility, via the Intermediate Ventilation Facility, and at the north portal Ventilation Facility. Additionally, the Project sponsor will develop and implement a Hazardous Spill Prevention Plan, a Hazardous Materials Remediation Plan, and an Emergency Management Plan.

Please refer to responses to **DEIS Comment 85** for responses to the RATT questions.

COMMENTS

DEIS Comment 148:



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THE HEARING OFFICER: Thank you.

UNIDENTIFIED SPEAKER: I am reading for. Soledad Salame at What conditions would

1 require evacuations and plans to house residents and schools and for how long? Where would residents go in the event of fire, explosions, caustic fumes, acid fumes, poisonous gases, smoke, oil fumes, radioactive and biohazard releases? If there were an explosion like the so-called bomb train that exploded in Canada killing citizens destroying over two square miles in the community, what would happen to residents along the tunnels? Would the tunnel collapse and/or the vents have a melt down and cease to function?

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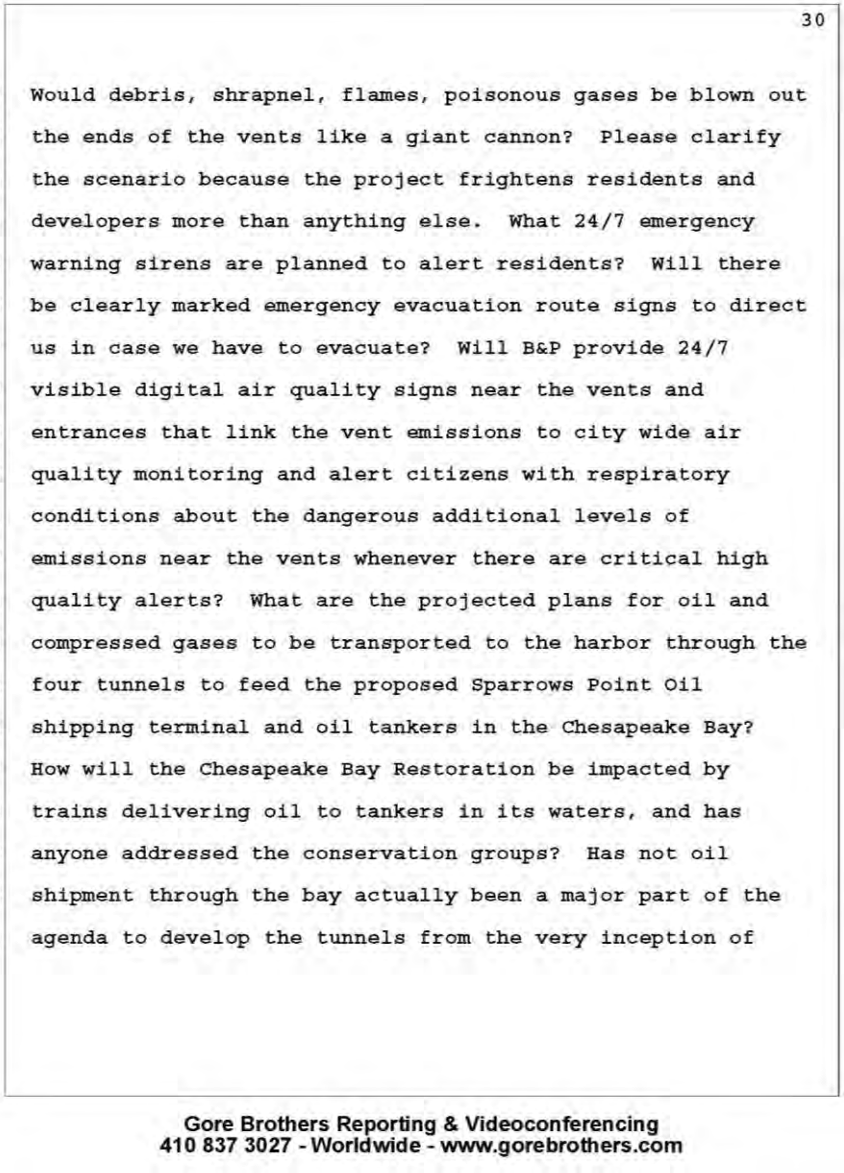
RESPONSES

Response to Comment 1:
Local, state, and federal fire and rescue officials are prepared to respond to situations such as the ones you've described. The B&P Tunnel would not create conditions that do not already exist elsewhere in the City and State.

The Project has been planned mostly underground in order to avoid greater impacts to the community. Fire in a tunnel is much less damaging to a community than an above-ground track running through the neighborhood. The new B&P Tunnel will be designed to be better equipped and prepared than the current B&P Tunnel.

In terms of structural integrity, all of the proposed Project infrastructure will be designed, constructed, and maintained using proven modern design and safety standards. The Project will be designed in accordance with applicable regulations, oversight agency guidance, and knowledge of safety standards to ensure optimal safety.

COMMENTS



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2 Would debris, shrapnel, flames, poisonous gases be blown out the ends of the vents like a giant cannon? Please clarify the scenario because the project frightens residents and developers more than anything else. What 24/7 emergency warning sirens are planned to alert residents? Will there be clearly marked emergency evacuation route signs to direct us in case we have to evacuate? Will B&P provide 24/7 visible digital air quality signs near the vents and entrances that link the vent emissions to city wide air quality monitoring and alert citizens with respiratory conditions about the dangerous additional levels of emissions near the vents whenever there are critical high quality alerts?

3 What are the projected plans for oil and compressed gases to be transported to the harbor through the four tunnels to feed the proposed Sparrows Point Oil shipping terminal and oil tankers in the Chesapeake Bay? How will the Chesapeake Bay Restoration be impacted by trains delivering oil to tankers in its waters, and has anyone addressed the conservation groups? Has not oil shipment through the bay actually been a major part of the agenda to develop the tunnels from the very inception of

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Response to Comment 2:
In the very rare event of a tunnel fire, the path from a tunnel fire to the exhaust louvers is long and circuitous, with many bends that reduce the ability of particles to travel through the fans and louvers.

In the event of an emergency, local first responders will alert the community. Evacuation routes, if needed, would be established following an event. Evacuation routes cannot be established prior to knowledge of the location of the event.

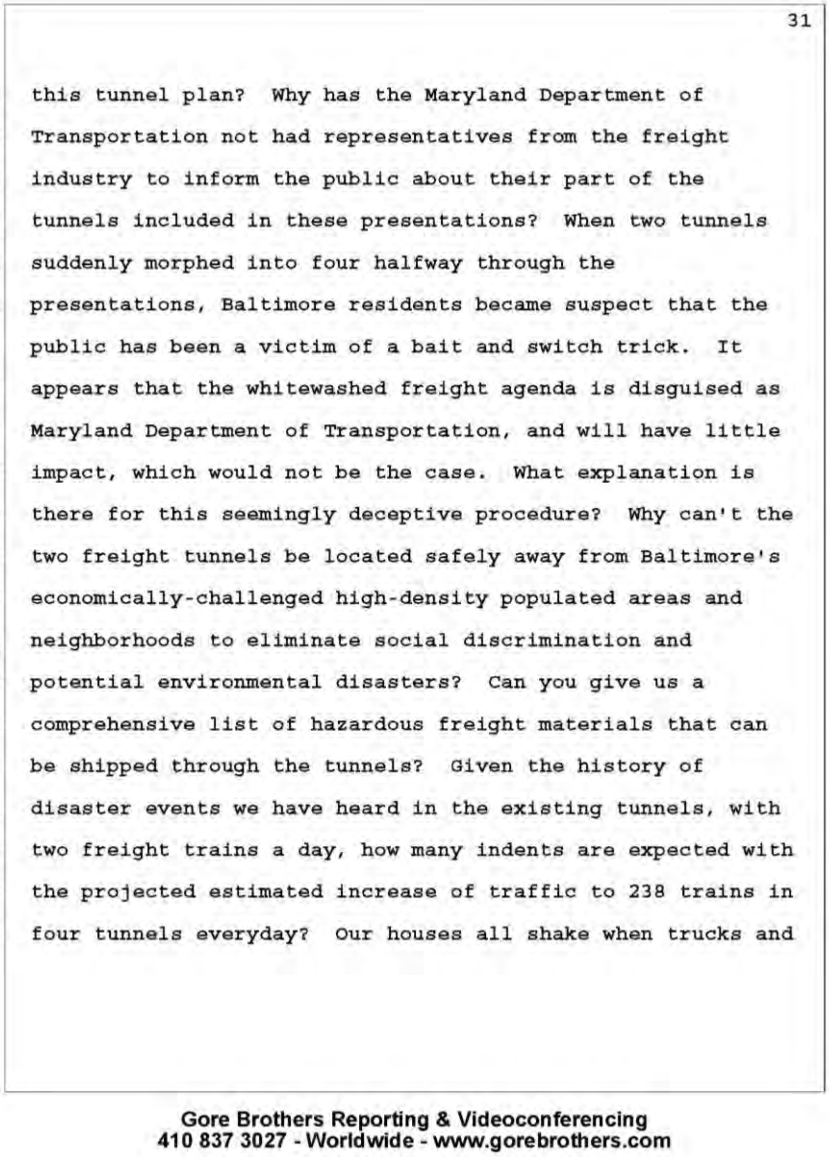
The Project meets air quality standards; therefore, public alerts regarding emissions will not be required.

Response to Comment 3:
For the past several years, only one local freight train (Norfolk Southern) has been operating through the B&P Tunnel daily, serving customers south of the B&P Tunnel between Baltimore and Washington, DC. Currently, cargos to/from specific railroad customers of the freight trains that pass through the B&P Tunnel include vegetable oil, plastic pellets, paper, lumber, and produce. However, there are no regulations or restrictions which would preclude other forms of freight cargo on these trains, providing the material is moved in accordance with federal transportation rules.

The build alternatives could increase throughput capacity for freight traffic through the Study Area. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the tunnel without construction of additional connections as part of a separate project from the Project. While no specific increase in freight traffic are planned or proposed with the Project, increased capacity and operational flexibility on the NEC could allow more freight trains through the Study Area without impeding their passenger operations. At present, there are no indications from the freight railroads that existing freight traffic levels through the B&P Tunnel are to change in the near future. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces on rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

The Project was initiated because the B&P Tunnel is more than 140 years old and is approaching the end of its useful life with regard to its physical condition. While the existing Tunnel remains safe for rail transportation, it requires substantial maintenance and repairs, and does not meet current design standards. The Tunnel is considered to be structurally deficient due to its age, the original design, and wear and tear. The Tunnel is

COMMENTS



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4 this tunnel plan? Why has the Maryland Department of Transportation not had representatives from the freight industry to inform the public about their part of the

5 tunnels included in these presentations? When two tunnels suddenly morphed into four halfway through the presentations, Baltimore residents became suspect that the public has been a victim of a bait and switch trick. It appears that the whitewashed freight agenda is disguised as Maryland Department of Transportation, and will have little impact, which would not be the case. What explanation is there for this seemingly deceptive procedure? Why can't the

6 two freight tunnels be located safely away from Baltimore's economically-challenged high-density populated areas and neighborhoods to eliminate social discrimination and potential environmental disasters? Can you give us a

7 comprehensive list of hazardous freight materials that can be shipped through the tunnels? Given the history of disaster events we have heard in the existing tunnels, with two freight trains a day, how many indents are expected with the projected estimated increase of traffic to 238 trains in four tunnels everyday? Our houses all shake when trucks and

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RESPONSES

also functionally obsolete and unable to meet current and future rail demands. The Purpose and Need of the B&P Tunnel Project is further defined in **Chapter II** of this FEIS.

The Project Team has conducted extensive research with special interest groups such as the Chesapeake Bay Foundation. Any comments received from conservation groups during the DEIS review time period are included in this FEIS.

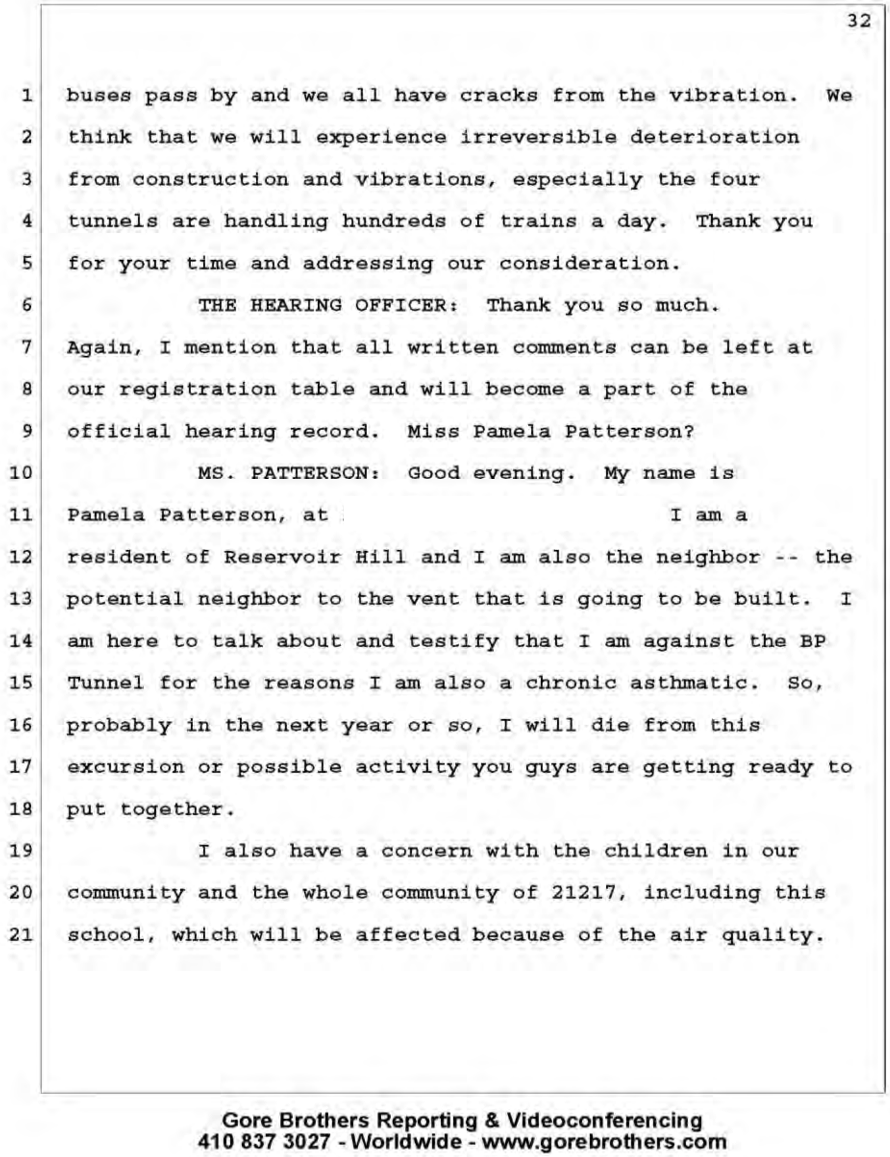
Response to Comment 4:
Representatives from the Maryland Department of Transportation (MDOT) and the Federal Railroad Administration were present at various meetings on 10/15/2014, 05/20/2015, 06/17/2015, 04/20/2016, and 06/17/2015, respectively. MDOT tracks the movement of freight within the State and works with the local jurisdictions to ensure that plans are in place in the event of an accident.

Response to Comment 5:
The Northeast Corridor (NEC) faces serious challenges to meet current and projected travel demand. Responding to these pressing issues, the FRA initiated the NEC FUTURE Environmental Impact Statement as a comprehensive planning process for future investment in the corridor. The NEC FUTURE identified the B&P Tunnel as one of the segments along the NEC that faces capacity constraints and reliability challenges due to multiple chokepoints and state-of-good-repair needs.

Consistent with NEC long-range planning needs identified in the NEC FUTURE Program, the Project proposes a total of four tracks through Baltimore. The increased number of tracks will eliminate a chokepoint and expand capacity to accommodate future high-frequency, high-speed passenger train service anticipated on the NEC by 2040. Four tracks provide the resiliency/redundancy needed to maintain rail traffic between the West Baltimore MARC Station and Baltimore Penn Station and NEC connectivity in the event of interruptions to service on any of the tracks. Four tracks also provide the ability for conflict-free operation and separation of traffic types (intercity vs. commuter) which further improves operations, reduces travel time, and accommodates over-takes of slower trains by faster trains.

Response to Comment 6:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2:

COMMENTS



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buses pass by and we all have cracks from the vibration. We 8 think that we will experience irreversible deterioration from construction and vibrations, especially the four tunnels are handling hundreds of trains a day. Thank you for your time and addressing our consideration.

THE HEARING OFFICER: Thank you so much. Again, I mention that all written comments can be left at our registration table and will become a part of the official hearing record. Miss Pamela Patterson?

MS. PATTERSON: Good evening. My name is Pamela Patterson, at I am a resident of Reservoir Hill and I am also the neighbor -- the potential neighbor to the vent that is going to be built. I am here to talk about and testify that I am against the BP Tunnel for the reasons I am also a chronic asthmatic. So, probably in the next year or so, I will die from this excursion or possible activity you guys are getting ready to put together.

I also have a concern with the children in our community and the whole community of 21217, including this school, which will be affected because of the air quality.

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RESPONSES

Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Since the publication of the DEIS, Alternative 3B was selected as the Preferred Alternative. Alternative 3B was advanced through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the selection of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

The Environmental Justice (EJ) analysis in **Chapter VI** of this FEIS describes the methodology for determining disproportionate impact to minority or economically disadvantaged communities. EJ populations would experience impacts as a result of the Project, including property acquisition; impacts to housing, land use/zoning, and community facilities; changes in visual quality, and noise impacts as described in **Chapter VI**. The Project Team has engaged extensively with the community throughout the development of the Project, detailed in **Chapter VIII**. Mitigation efforts are ongoing with community members and organizations and are documented in this FEIS.

Response to Comment 7:
As described above, currently, cargos to/from specific railroad customers of the freight trains that pass through the B&P Tunnel include vegetable oil, plastic pellets, paper, lumber, and produce. However, there are no regulations or restrictions which would preclude other forms of freight cargo on these trains, providing the material is moved in accordance with federal transportation rules. Railroad freight traffic is subject to numerous variables, including government regulation, as well as market forces on rail transported materials such as coal, which represents 20-25 percent of total railroad car loads, crude oil/crude industrials sands and ethanol. As an example of this variability, the Department of Energy reported that for the first five months of 2016, crude oil by rail transportation decreased 45 percent compared to the same period in 2015. The combination of these variables makes it virtually impossible to accurately forecast freight usage through the tunnel. Variability of freight traffic is further described in **Chapter V.**

COMMENTS

RESPONSES

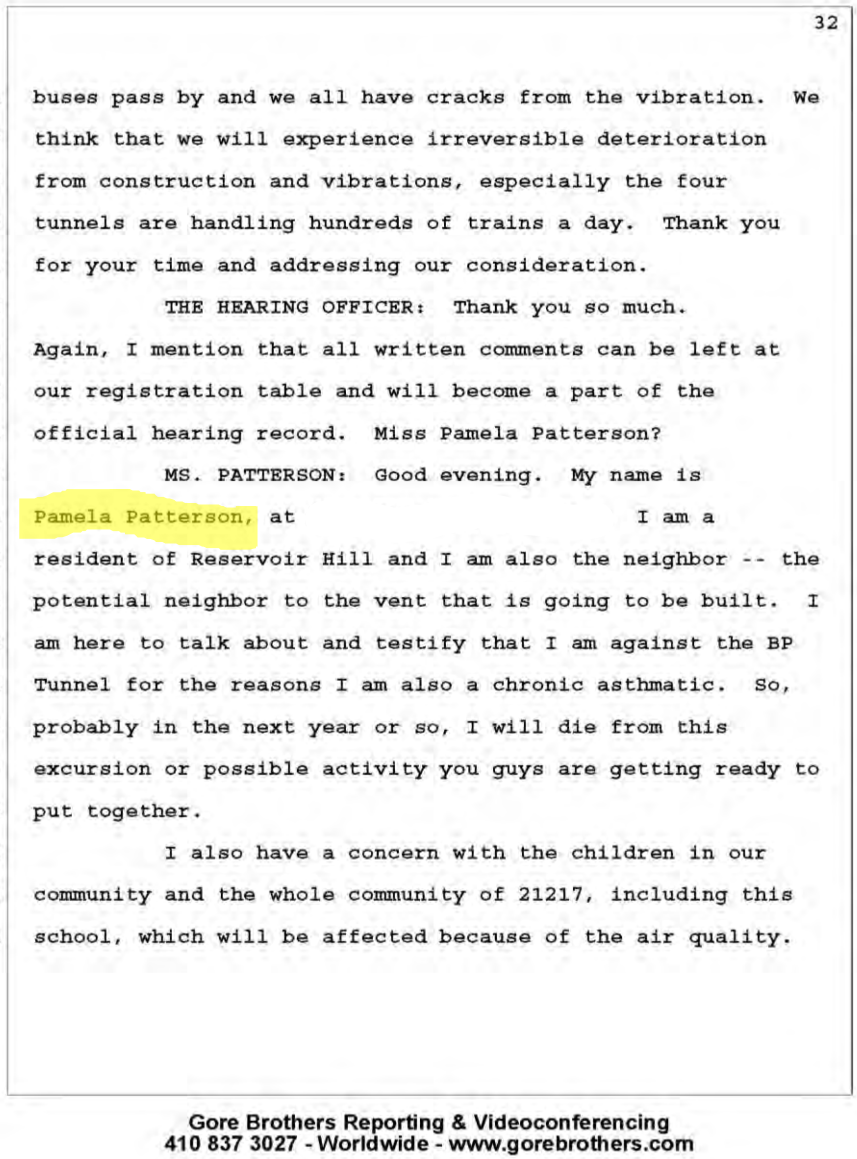
All of the proposed Project infrastructure will be designed, constructed, and maintained using proven modern design and safety standards. The Project will be designed in accordance with applicable regulations, oversight agency guidance, and knowledge of safety standards to ensure optimal safety. These things will reduce the possibility of accidents in the new B&P Tunnel, and will also ensure the best possible protection in the unlikely event of an incident.

Response to Comment 8:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

Please refer to responses to **DEIS Comment 85** for responses to the RATT questions.

COMMENTS

DEIS Comment 149:



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buses pass by and we all have cracks from the vibration. We
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from construction and vibrations, especially the four
tunnels are handling hundreds of trains a day. Thank you
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MS. PATTERSON: Good evening. My name is
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resident of Reservoir Hill and I am also the neighbor -- the
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2 probably in the next year or so, I will die from this
excursion or possible activity you guys are getting ready to
put together.

I also have a concern with the children in our
3 community and the whole community of 21217, including this
school, which will be affected because of the air quality.

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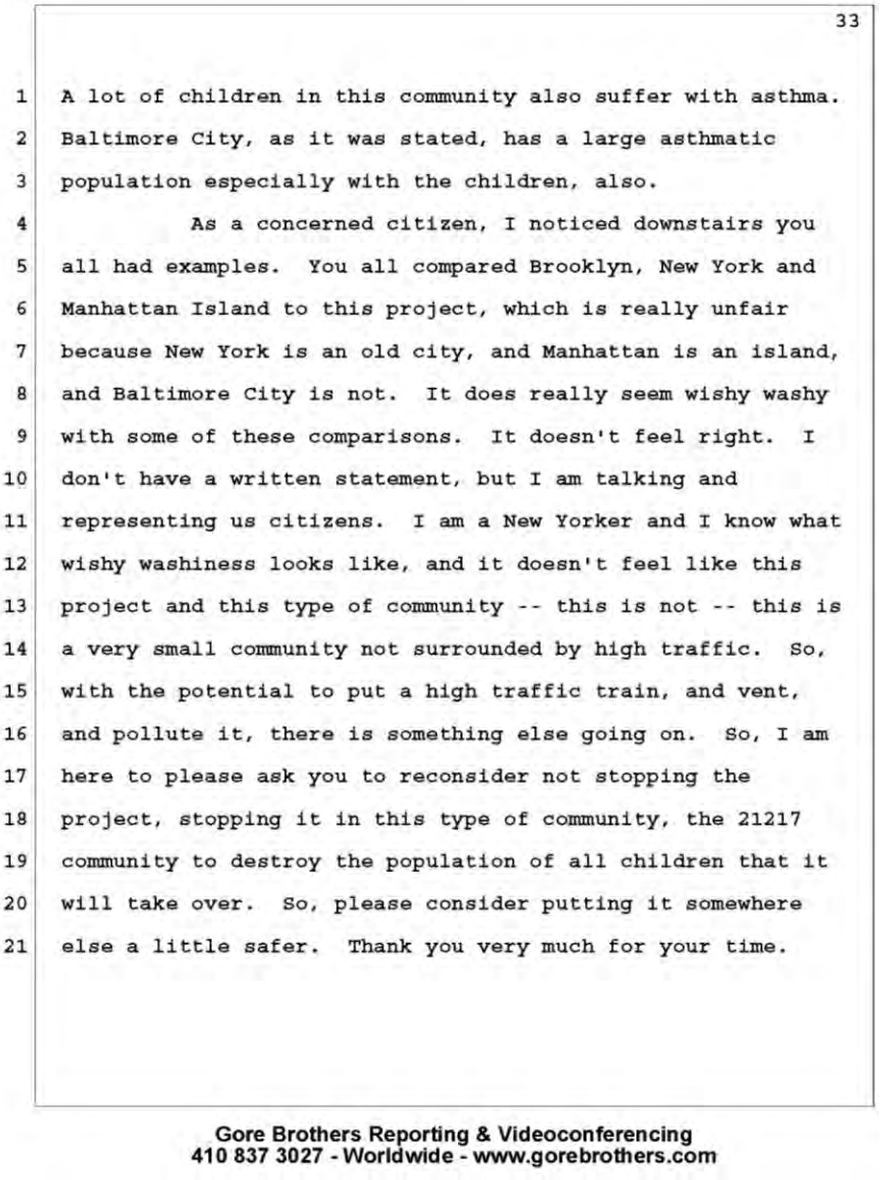
RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 2:
The Project Team has assessed the existing air quality conditions of the Project Study Area. Any changes to air quality would be in accordance with the Clean Air Act and other applicable air quality regulations. The project team has compared emissions from diesel train traffic through the Study Area with and without a new tunnel. With additional trains made possible by the new tunnel, the emissions levels of VOC, NO$_x$, and PM$_{2.5}$ will change, but would be below *the de-minimis* levels that were set to safeguard public health. The proposed project would not result in adverse impacts to air quality due to operational emissions.

Response to Comment 3:
Children's Health was assessed for Air Quality, Water, Soil and Hazardous Material and is described in **Chapter VI** of this FEIS. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO$_x$, VOC, and PM$_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA. No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water. Under the Preferred Alternative, 112 sites of concern were identified within 1 mile of the alignment; once type and extent of contamination and details of construction are known, potential risk and exposure can be assessed and appropriate documentation in place.

COMMENTS



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A lot of children in this community also suffer with asthma. Baltimore City, as it was stated, has a large asthmatic population especially with the children, also.

4

As a concerned citizen, I noticed downstairs you all had examples. You all compared Brooklyn, New York and Manhattan Island to this project, which is really unfair because New York is an old city, and Manhattan is an island, and Baltimore City is not. It does really seem wishy washy with some of these comparisons. It doesn't feel right. I don't have a written statement, but I am talking and representing us citizens. I am a New Yorker and I know what wishy washiness looks like, and it doesn't feel like this project and this type of community -- this is not -- this is a very small community not surrounded by high traffic. So, with the potential to put a high traffic train, and vent, and pollute it, there is something else going on. So, I am here to please ask you to reconsider not stopping the project, stopping it in this type of community, the 21217 community to destroy the population of all children that it will take over. So, please consider putting it somewhere else a little safer. Thank you very much for your time.

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RESPONSES

Response to Comment 4:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

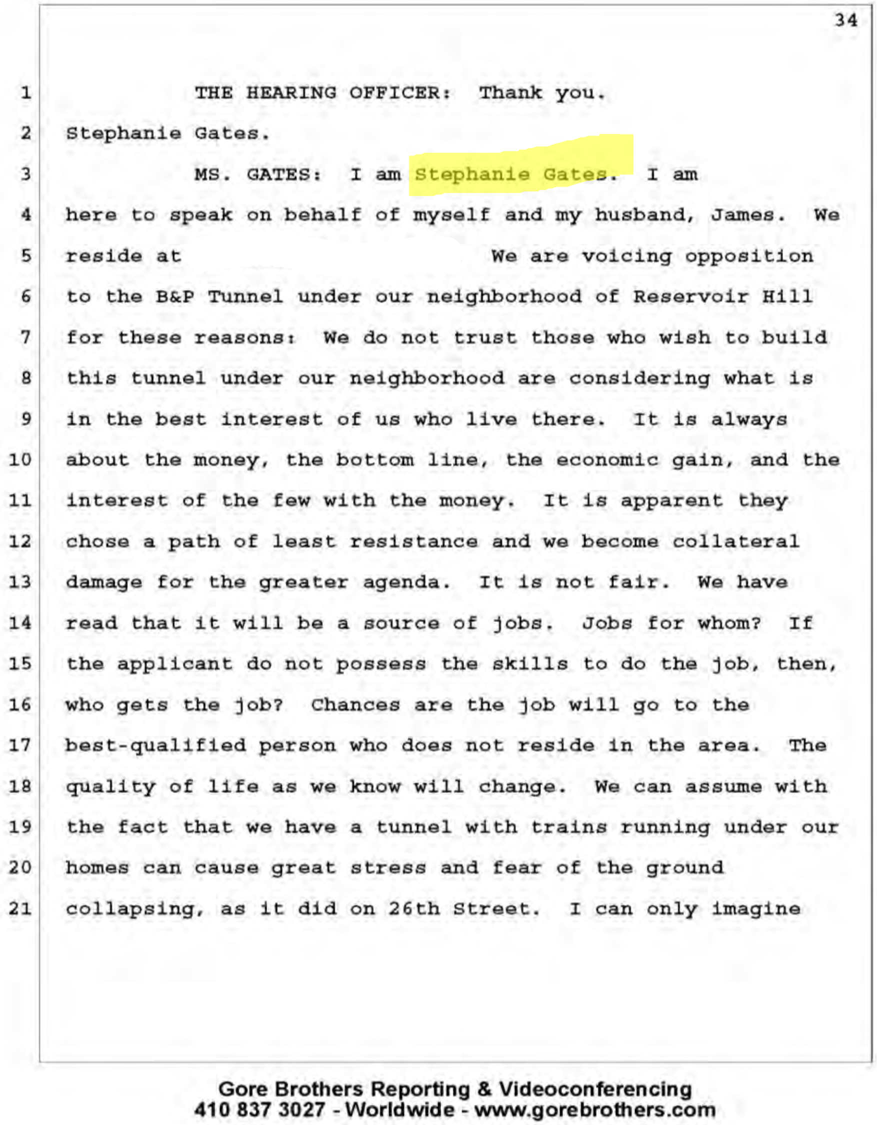
For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health, among others, as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

COMMENTS

DEIS Comment 150:



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THE HEARING OFFICER: Thank you.
Stephanie Gates.

MS. GATES: I am Stephanie Gates. I am
here to speak on behalf of myself and my husband, James. We
reside at We are voicing opposition
to the B&P Tunnel under our neighborhood of Reservoir Hill
for these reasons: We do not trust those who wish to build
this tunnel under our neighborhood are considering what is
in the best interest of us who live there. It is always
1 about the money, the bottom line, the economic gain, and the
interest of the few with the money. It is apparent they
chose a path of least resistance and we become collateral
damage for the greater agenda. It is not fair. We have
read that it will be a source of jobs. Jobs for whom? If
the applicant do not possess the skills to do the job, then,
2 who gets the job? Chances are the job will go to the
best-qualified person who does not reside in the area. The
quality of life as we know will change. We can assume with
3 the fact that we have a tunnel with trains running under our
homes can cause great stress and fear of the ground
collapsing, as it did on 26th Street. I can only imagine

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RESPONSES

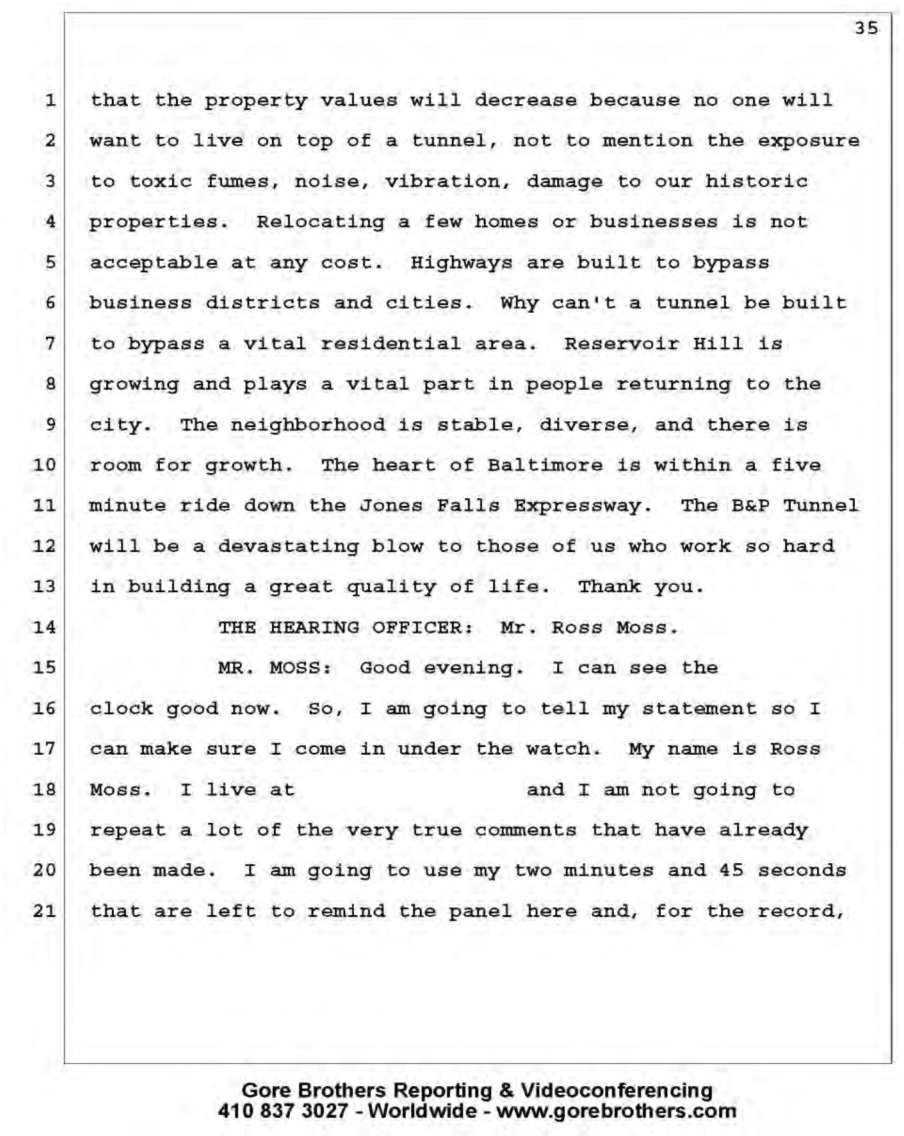
Response to Comment 1:
The Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS.

Response to Comment 2:
As part of the mitigation efforts, the Project sponsor would provide coordination with local job training organizations to 1) facilitate targeted job training by providing estimates of the type, number, and timing of jobs expected to be created by project contractors, 2) include in construction contracts goals for nationally targeted workers of social and economic disadvantage, and 3) require project contractors to report on a regular basis their progress in meeting contract goals. The Project sponsor will provide public reporting on job creation. These efforts are ongoing and are documented in this FEIS as described in **Chapter VI**.

Response to Comment 3:
All of the proposed Project infrastructure will be designed, constructed, and maintained using proven modern design and safety standards. The Project will be designed in accordance with applicable regulations, oversight agency guidance, and knowledge of safety standards to ensure optimal safety.

The housing market in Reservoir Hill is subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

COMMENTS



that the property values will decrease because no one will
want to live on top of a tunnel, not to mention the exposure
to toxic fumes, noise, vibration, damage to our historic
4 properties. Relocating a few homes or businesses is not
acceptable at any cost. Highways are built to bypass
5 business districts and cities. Why can't a tunnel be built
to bypass a vital residential area. Reservoir Hill is
growing and plays a vital part in people returning to the
city. The neighborhood is stable, diverse, and there is
room for growth. The heart of Baltimore is within a five
minute ride down the Jones Falls Expressway. The B&P Tunnel
will be a devastating blow to those of us who work so hard
in building a great quality of life. Thank you.

THE HEARING OFFICER: Mr. Ross Moss.

MR. MOSS: Good evening. I can see the clock good now. So, I am going to tell my statement so I can make sure I come in under the watch. My name is Ross Moss. I live at and I am not going to repeat a lot of the very true comments that have already been made. I am going to use my two minutes and 45 seconds that are left to remind the panel here and, for the record,

RESPONSES

Response to Comment 4:
The Project Team has assessed the existing air quality conditions of the Project Study Area. Any changes to air quality would be in accordance with the Clean Air Act and other applicable air quality regulations. The project team has compared emissions from diesel train traffic through the Study Area with and without a new tunnel. With additional trains made possible by the new tunnel, the emissions levels of VOC, NO_x, and $PM_{2.5}$ will change, but would be below *the de-minimis* levels that were set to safeguard public health. The proposed project would not result in adverse impacts to air quality due to operational emissions.

Alternative 3A is estimated to have 254 Moderate noise impacts, Alternative 3 B is estimated to have 141 Severe and 296 Moderate noise impacts, and Alternative 3C is estimated to have 111 Severe and 979 Moderate noise impacts. The severe impacts were predicted at residential areas nearest the railroad between the West Baltimore station and the south portal. The duration of the construction period will be six years; 2020 to 2025. Measures will be implemented to lessen noise during construction, which could potentially include erection of temporary walls or earth berms between the noise source and the sensitive receptor, the identification of haul routes that avoid sensitive receptors to the maximum extent possible, and location of stationary noise generating equipment at a distance from sensitive receptors. In addition, construction activities can be planned to avoid prolonged noise generating activities and to minimize construction activities during the most sensitive time of day or night. **Chapter VI** of this FEIS further details noise construction mitigation.

A general vibration assessment was conducted to assess the potential for impacts at sensitive receptors within the Study Area. Operational impacts were evaluated using FTA *Transit Noise and Vibration Impact Assessment* and construction vibration levels were also evaluated using both FTA guidelines as well as standard industry practices for evaluating vibration due to tunnel boring and other tunnel excavation activities.

Operational levels under the build alternatives due to ground-borne vibration from train passbys are not predicted to exceed the FTA ‘frequent’ impact criteria at any residences (FTA Category 2 land-uses) or institutional receptors (FTA Category 3 land-uses). However, under the Preferred Alternative, impacts due to ground-borne noise from Acela train passbys are predicted at 444 residences and 5 institutional receptors. No FTA Category 1 land-uses (highly-sensitive equipment) were identified along the Project corridor.

Heavy machinery is the major source of vibration during construction. Heavy machinery could include tunnel boring machines (TBM), earth-moving equipment, and heavy-duty impulsive equipment. The TBM induced ground-borne vibrations are frequently discussed as Peak Particle Velocity (PPV) at a given location. PPVs generally use units of inches per second (ips) as a unit of measurement. TBM vibrations during construction would generally be between 0.04 and 0.2 ips, and thus are not likely to damage buildings near or above the proposed tunnels. The TBM would advance around 30 feet per day, meaning the vibration

COMMENTS	RESPONSES

source would likely only be felt for a short duration before the vibration source moves away from a given location. This means that someone may sense the TBM vibrations for a day or two when tunneling is continuous. One could describe the perceived vibrations by common activities such as traffic or construction equipment. The range of PPVs estimated here would be comparable to the vibration (but not the noise) of a truck traveling 20 to 30 feet away from an observer.

Another major source of vibration during construction is Drill and Blast tunnel excavation. This technique produces two types of disturbing vibrations, ground-borne vibrations and air vibrations, which are described **in Chapter VI.** Drill and Blast excavation would take place at the north and south portals, cross passages, sump pump stations, the North Ventilation Facility, the Intermediate Ventilation Facility, the Intermediate Ventilation Facility cavern, plenum tunnel and shaft, and the egress cavern and tunnel. The portals could be configured to contain or block the overpressures so as not to disturb the surrounding portal areas, and ground-borne blasting vibrations are generally less than 2 inches/second, which is a generally accepted building damage threshold.

All construction activities would need to comply with the FTA limits and guidelines to minimize vibration in the community. Details of vibration impacts and minimization are discussed in **Chapter VI.**

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include: sites where vibration or ground-borne noise impacts are predicted or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities, rather than other factors (such as normal deterioration due to old age) the property owner would be compensated for the cost of repairs.

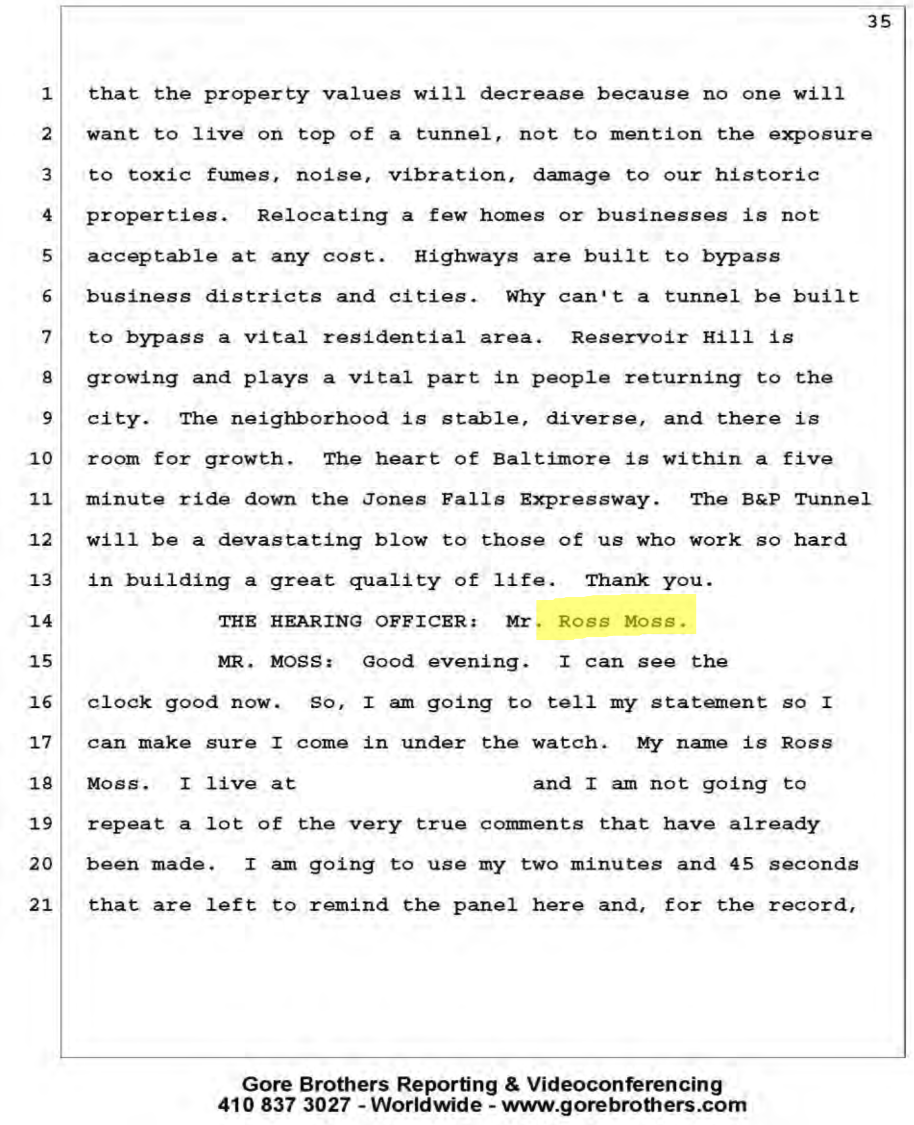
The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. As the Project is advanced to the design phase and if funding is available, the Project Team would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be underground which would reduce the overall impact to the communities. The Project will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include

COMMENTS	RESPONSES
	construction contract goals for workers of social and economic disadvantage. The Project will also provide relocation benefits to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS. **Response to Comment 5:** The Project has been planned mostly underground in order to avoid greater impacts to the community.

COMMENTS

RESPONSES

DEIS Comment 151:



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that the property values will decrease because no one will want to live on top of a tunnel, not to mention the exposure to toxic fumes, noise, vibration, damage to our historic properties. Relocating a few homes or businesses is not acceptable at any cost. Highways are built to bypass business districts and cities. Why can't a tunnel be built to bypass a vital residential area. Reservoir Hill is growing and plays a vital part in people returning to the city. The neighborhood is stable, diverse, and there is room for growth. The heart of Baltimore is within a five minute ride down the Jones Falls Expressway. The B&P Tunnel will be a devastating blow to those of us who work so hard in building a great quality of life. Thank you.

THE HEARING OFFICER: Mr. Ross Moss.

MR. MOSS: Good evening. I can see the clock good now. So, I am going to tell my statement so I can make sure I come in under the watch. My name is Ross Moss. I live at and I am not going to repeat a lot of the very true comments that have already been made. I am going to use my two minutes and 45 seconds that are left to remind the panel here and, for the record,

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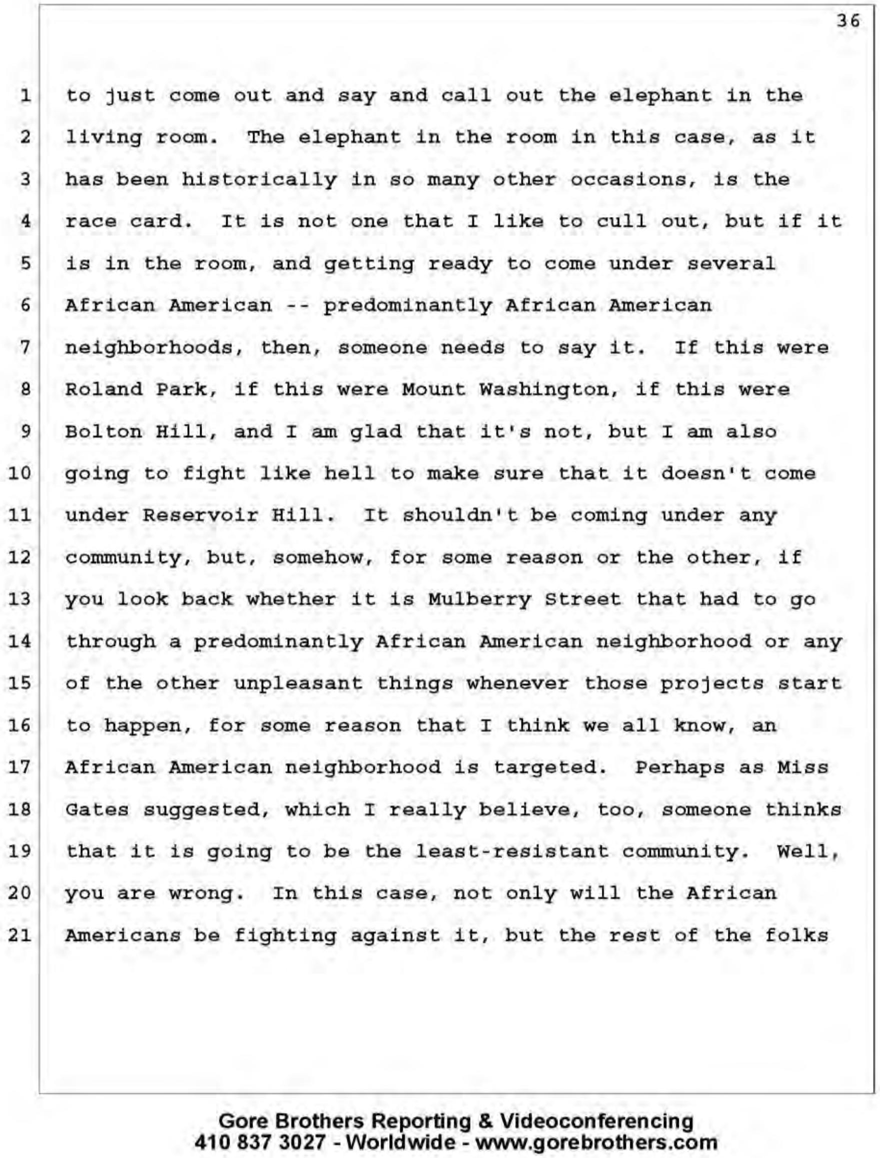
COMMENTS



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1 to just come out and say and call out the elephant in the living room. The elephant in the room in this case, as it has been historically in so many other occasions, is the race card. It is not one that I like to cull out, but if it is in the room, and getting ready to come under several African American -- predominantly African American neighborhoods, then, someone needs to say it. If this were Roland Park, if this were Mount Washington, if this were Bolton Hill, and I am glad that it's not, but I am also going to fight like hell to make sure that it doesn't come under Reservoir Hill. It shouldn't be coming under any community, but, somehow, for some reason or the other, if you look back whether it is Mulberry Street that had to go through a predominantly African American neighborhood or any of the other unpleasant things whenever those projects start to happen, for some reason that I think we all know, an African American neighborhood is targeted. Perhaps as Miss Gates suggested, which I really believe, too, someone thinks that it is going to be the least-resistant community. Well, you are wrong. In this case, not only will the African Americans be fighting against it, but the rest of the folks

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RESPONSES

Response to Comment 1:
The existing B&P Tunnel tracks are in Bolton Hill. Options as to where the new B&P Tunnel should reside are limited. Due to the geography and the shallowness of the area beneath Bolton Hill, this area was not a feasible option for the proposed Tunnel, whereas the area underneath Reservoir Hill is deeper and more practicable.

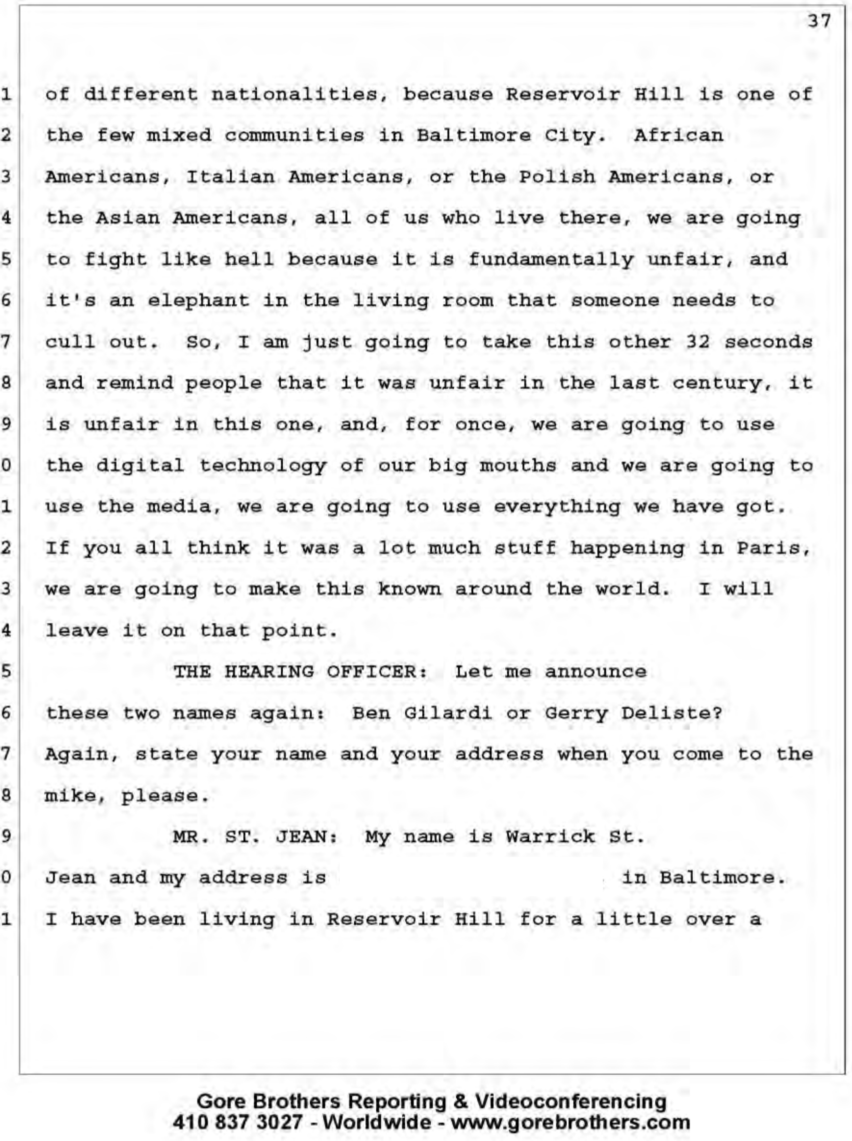
Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of Transportation's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

The B&P Project Team has performed an Environmental Justice (EJ) analysis consistent with EO 12898 and subsequent USDOT Orders. A critical component of the Executive Order on environmental justice is public outreach. The Project Team has conducted extensive engagement with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held with local officials; public, local, and regional organizations; government agencies; and representatives of affected EJ communities along the evaluated alternative alignment. Three Public Open Houses, as well as ten community meetings, have been held where the public was given the opportunity to learn about the Project development in-person, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings. Additionally, the Project Team attended meetings at the request of the following organizations: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter's Clavier Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School.

Direct mailings to residents in the Study Area included property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The Project website continues to post meeting notices, Project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship, and other organizations.

The Project Team studied community composition in the areas affected by the build alternatives. It reviewed data from the American Community Survey 2009-2013 for minority and low-income populations, the National Center for Educational Statistics, government-assisted housing programs, historical references, city officials, field visits, and community meetings. From this information, the Project Team learned that of the 77

COMMENTS



1 of different nationalities, because Reservoir Hill is one of the few mixed communities in Baltimore City. African Americans, Italian Americans, or the Polish Americans, or the Asian Americans, all of us who live there, we are going to fight like hell because it is fundamentally unfair, and it's an elephant in the living room that someone needs to cull out. So, I am just going to take this other 32 seconds and remind people that it was unfair in the last century, it is unfair in this one, and, for once, we are going to use the digital technology of our big mouths and we are going to use the media, we are going to use everything we have got. If you all think it was a lot much stuff happening in Paris, we are going to make this known around the world. I will leave it on that point.

THE HEARING OFFICER: Let me announce these two names again: Ben Gilardi or Gerry Deliste? Again, state your name and your address when you come to the mike, please.

MR. ST. JEAN: My name is Warrick St. Jean and my address is in Baltimore. I have been living in Reservoir Hill for a little over a

RESPONSES

Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS.

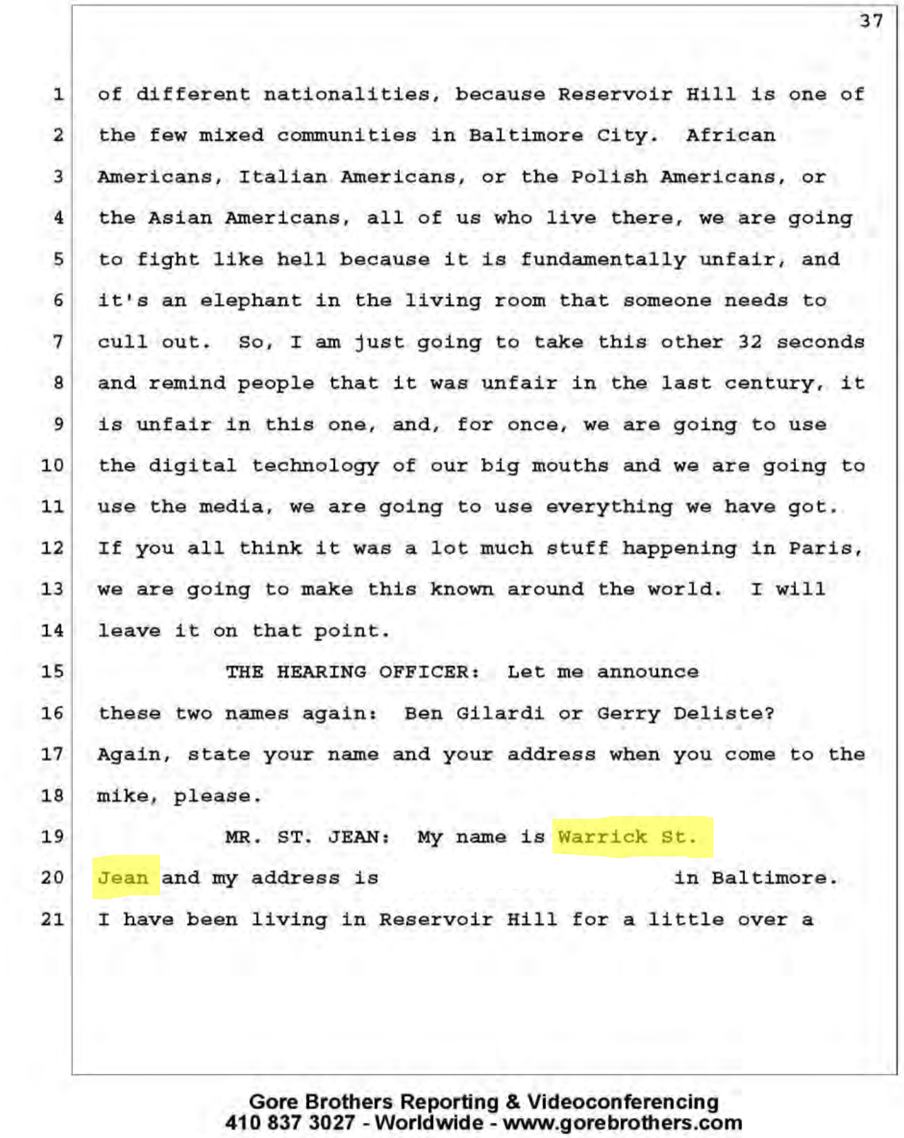
Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations. For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings.

As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be underground which would reduce the overall impact to the communities. The Project sponsor will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project sponsor will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

COMMENTS

RESPONSES

DEIS Comment 152:



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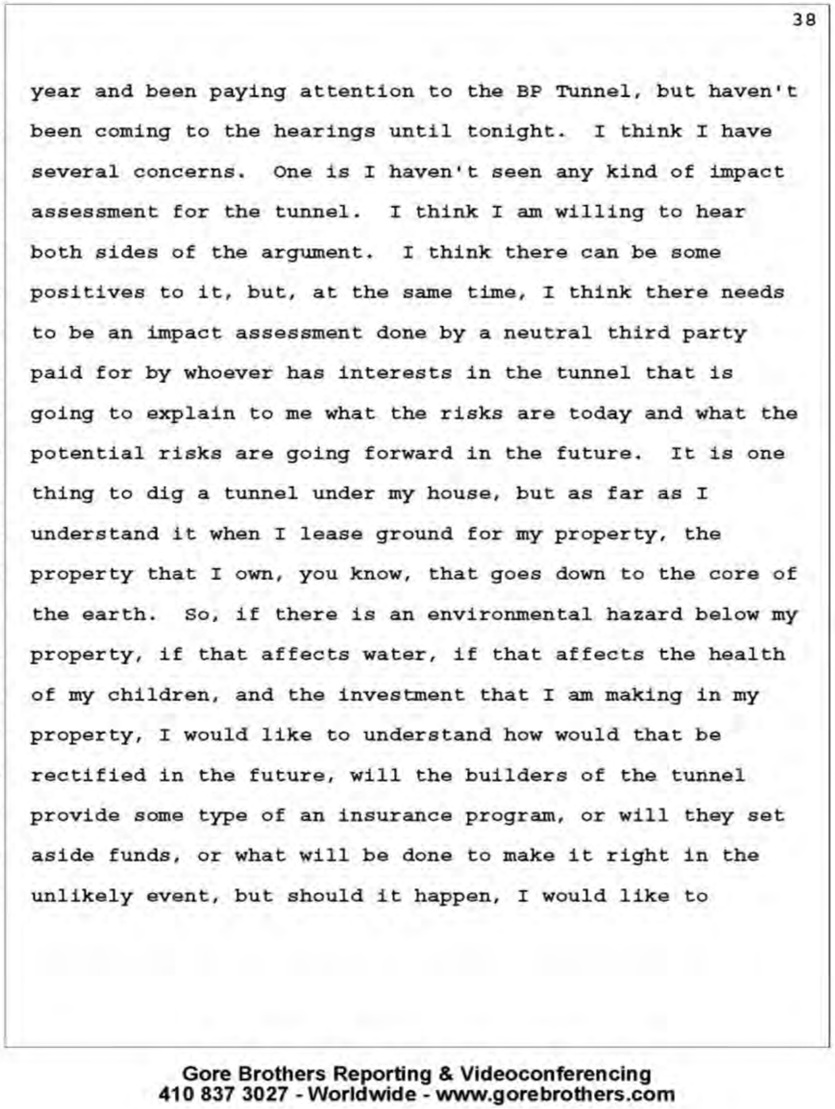
COMMENTS



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year and been paying attention to the BP Tunnel, but haven't been coming to the hearings until tonight. I think I have

1 several concerns. One is I haven't seen any kind of impact assessment for the tunnel. I think I am willing to hear both sides of the argument. I think there can be some positives to it, but, at the same time, I think there needs to be an impact assessment done by a neutral third party paid for by whoever has interests in the tunnel that is going to explain to me what the risks are today and what the potential risks are going forward in the future. It is one thing to dig a tunnel under my house, but as far as I understand it when I lease ground for my property, the

2 property that I own, you know, that goes down to the core of the earth. So, if there is an environmental hazard below my property, if that affects water, if that affects the health of my children, and the investment that I am making in my property, I would like to understand how would that be rectified in the future, will the builders of the tunnel provide some type of an insurance program, or will they set aside funds, or what will be done to make it right in the unlikely event, but should it happen, I would like to

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RESPONSES

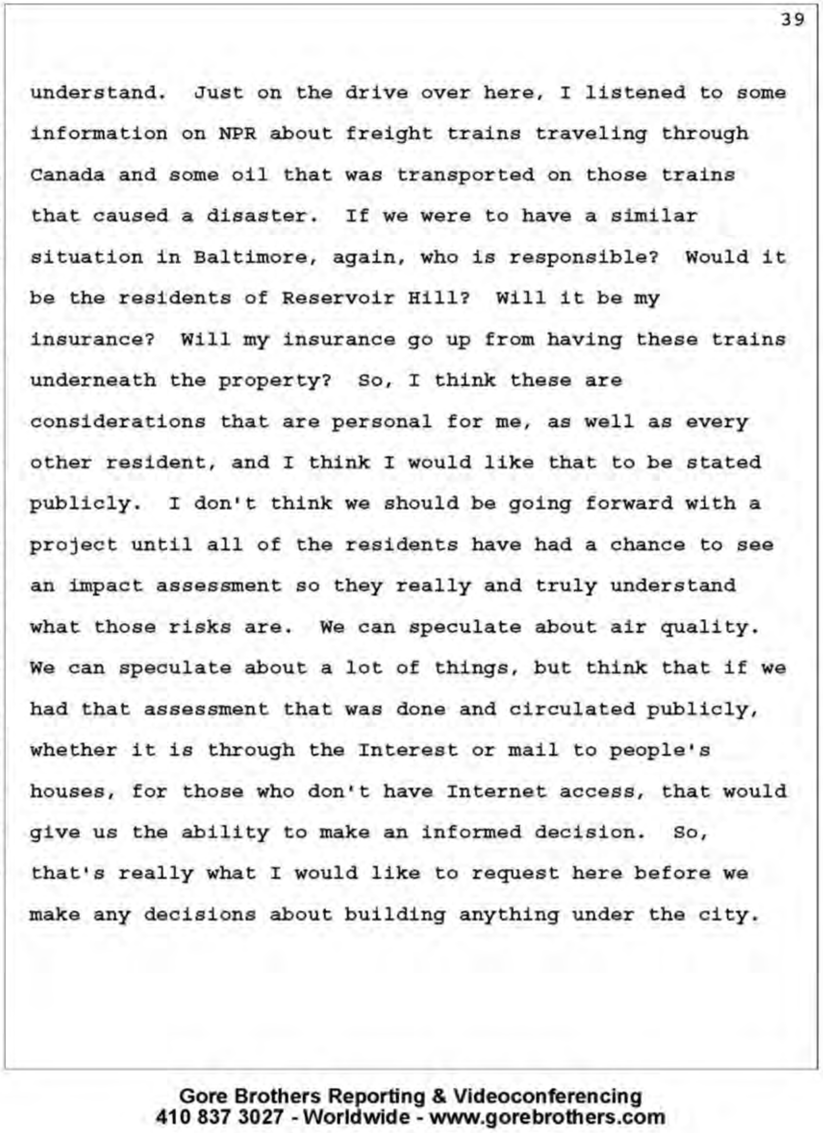
Response to Comment 1:
Since publication of the DEIS, Alternative 3B was advanced and modified through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. The FEIS identifies Alternative 3B as the Preferred Alternative. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the identification of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

Response to Comment 2:
No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water.

Chapter VI of this FEIS specifically reviewed Air Quality, Water, Soil, and Hazardous Material impacts on Children's Health. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation facilities would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses including even those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

COMMENTS



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3 understand. Just on the drive over here, I listened to some
information on NPR about freight trains traveling through
Canada and some oil that was transported on those trains
that caused a disaster. If we were to have a similar
situation in Baltimore, again, who is responsible? Would it
be the residents of Reservoir Hill? Will it be my
insurance? Will my insurance go up from having these trains
underneath the property? So, I think these are
considerations that are personal for me, as well as every
other resident, and I think I would like that to be stated
publicly. I don't think we should be going forward with a
project until all of the residents have had a chance to see
an impact assessment so they really and truly understand
4 what those risks are. We can speculate about air quality.
We can speculate about a lot of things, but think that if we
had that assessment that was done and circulated publicly,
whether it is through the Interest or mail to people's
houses, for those who don't have Internet access, that would
give us the ability to make an informed decision. So,
that's really what I would like to request here before we
make any decisions about building anything under the city.

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RESPONSES

Response to Comment 3:
The Project has been planned mostly underground in order to avoid greater impacts to the community. Fire in a tunnel is much less damaging to a community than a fire or other emergency event on an above-ground track running through the neighborhood. The new B&P Tunnel will be designed to be better equipped and prepared than the current B&P Tunnel.

FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

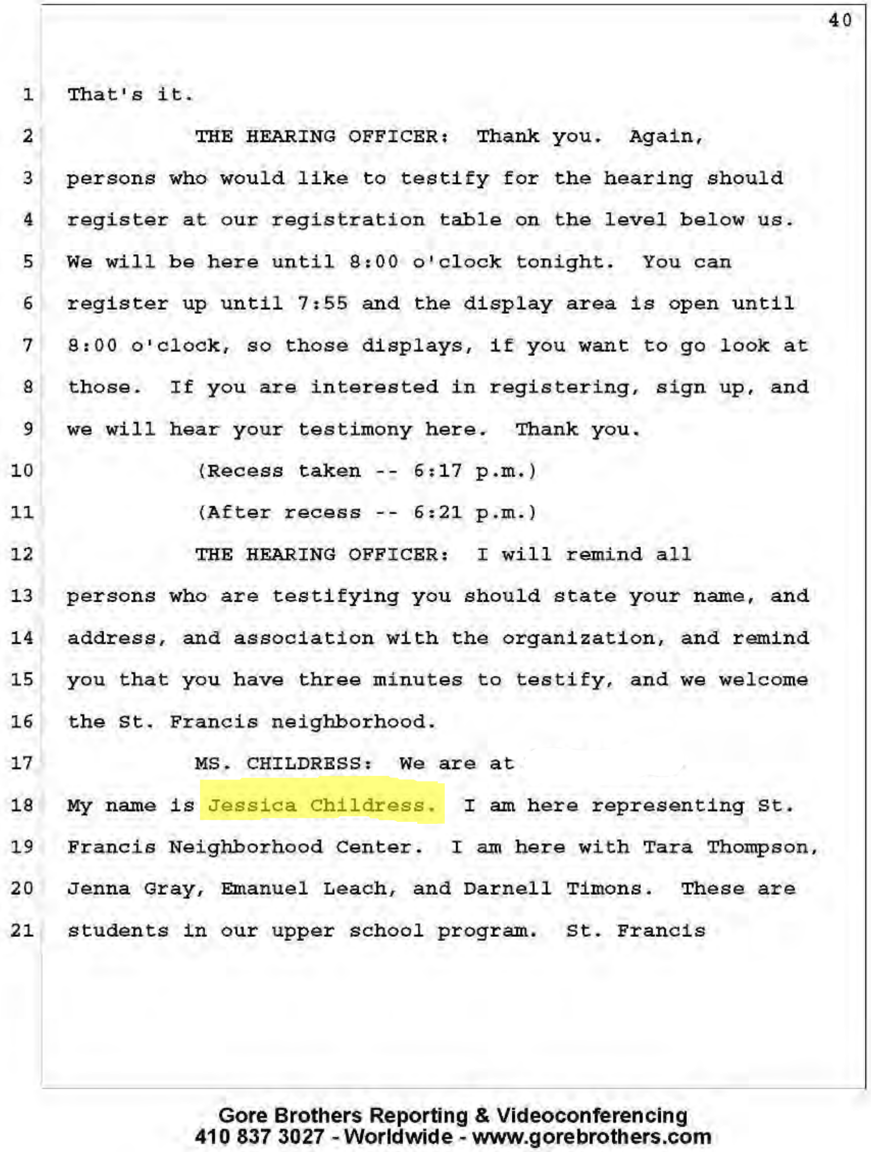
Response to Comment 4:
Regarding diesel emissions, when NO_2 levels are below applicable standards, other pollutants of concern are also within the appropriate range. As a result, when the Project Team analyzed predicted emissions from Ventilation Facilities, it focused on evaluating NO_2.

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to evaluate the potential 1-hour NO_2 emissions from the Project. AERMOD is the US Environmental Protection Agency's preferred and recommended air dispersion model. For the AERMOD analysis, a "worst case" scenario was analyzed assuming an average of ten diesel trains per hour operating between the hours of 6:00 am to 7:00 pm (peak hours of operation). No diesel operations were assumed from 10:00 pm to 3:00 am and partial operations (i.e., five diesel trains per hour) were assumed for the remaining time. Air emissions from the diesel train operations were assumed to exit through the north and south portals and from all three ventilation facilities. The emissions associated with the proposed portals and ventilation facilities would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards threshold levels that were set to safeguard public health. Air dispersion modeling results are found in **Chapter VI**.

COMMENTS

RESPONSES

DEIS Comment 153:



That's it.

THE HEARING OFFICER: Thank you. Again, persons who would like to testify for the hearing should register at our registration table on the level below us. We will be here until 8:00 o'clock tonight. You can register up until 7:55 and the display area is open until 8:00 o'clock, so those displays, if you want to go look at those. If you are interested in registering, sign up, and we will hear your testimony here. Thank you.

(Recess taken -- 6:17 p.m.)

(After recess -- 6:21 p.m.)

THE HEARING OFFICER: I will remind all persons who are testifying you should state your name, and address, and association with the organization, and remind you that you have three minutes to testify, and we welcome the St. Francis neighborhood.

MS. CHILDRESS: We are at My name is Jessica Childress. I am here representing St. Francis Neighborhood Center. I am here with Tara Thompson, Jenna Gray, Emanuel Leach, and Darnell Timons. These are students in our upper school program. St. Francis

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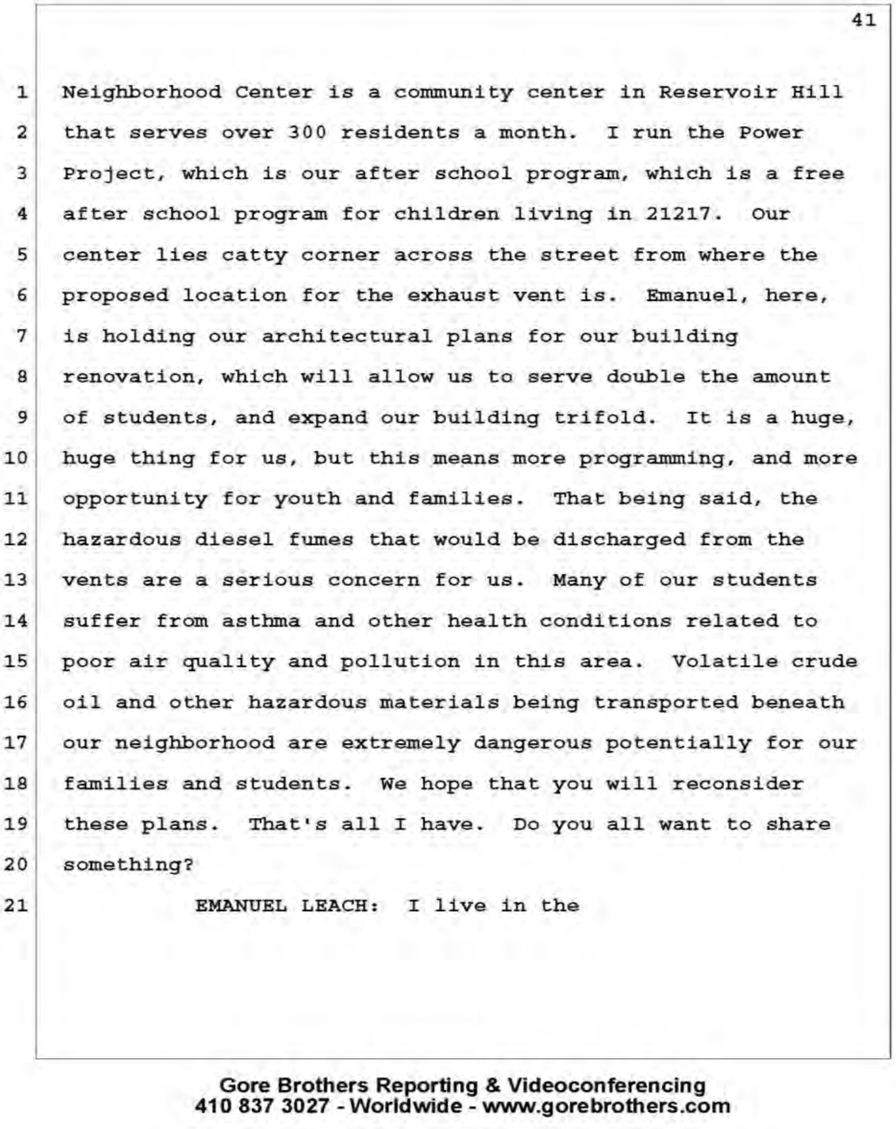
COMMENTS



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Neighborhood Center is a community center in Reservoir Hill
that serves over 300 residents a month. I run the Power
Project, which is our after school program, which is a free
after school program for children living in 21217. Our
center lies catty corner across the street from where the
1 proposed location for the exhaust vent is. Emanuel, here,
is holding our architectural plans for our building
renovation, which will allow us to serve double the amount
of students, and expand our building trifold. It is a huge,
huge thing for us, but this means more programming, and more
opportunity for youth and families. That being said, the
hazardous diesel fumes that would be discharged from the
2 vents are a serious concern for us. Many of our students
suffer from asthma and other health conditions related to
poor air quality and pollution in this area. Volatile crude
oil and other hazardous materials being transported beneath
3 our neighborhood are extremely dangerous potentially for our
families and students. We hope that you will reconsider
these plans. That's all I have. Do you all want to share
something?

EMANUEL LEACH: I live in the

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RESPONSES

Response to Comment 1:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

Response to Comment 2:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

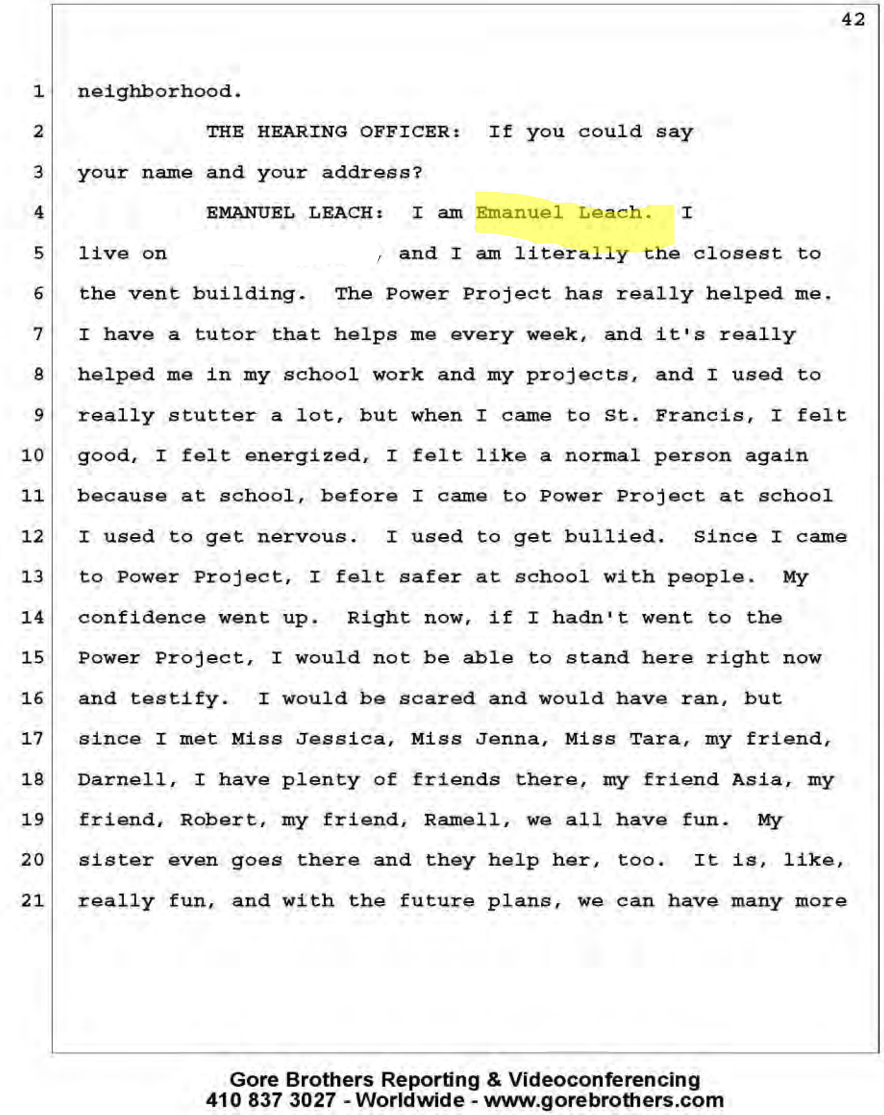
Chapter VI of this FEIS specifically reviewed Air Quality, Water, Soil, and Hazardous Material impacts on Children's Health. The The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of $NO_{x,}$ VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation facilities would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

Response to Comment 3:
Norfolk Southern has a Common Carrier Obligation, which prohibits it from refusing reasonable requests for their service, including transportation of hazardous materials. Hazardous/flammable materials can be transported along the Northeast Corridor and through the B&P Tunnel subject to the US Department of Transportation (USDOT) regulations governing the proper labeling/placarding and transportation of such regulated materials or wastes. The rules are explained at *https://www.fra.dot.gov/Page/P0444*. From that text:

COMMENTS	RESPONSES
	Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. The Division also has authority to oversee the movement of a package marked to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material. FRA requires a range of measures that minimize the risk to the public, including container labeling, container durability standards, emergency response information and safety and security plans. Local first responders receive training in hazardous materials incidents for specific facilities, including the B&P Tunnel. Build alternatives would be constructed to meet current standards for fire protection.

COMMENTS

DEIS Comment 154:



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neighborhood.

THE HEARING OFFICER: If you could say your name and your address?

1 EMANUEL LEACH: I am Emanuel Leach. I live on , and I am literally the closest to the vent building. The Power Project has really helped me. I have a tutor that helps me every week, and it's really helped me in my school work and my projects, and I used to really stutter a lot, but when I came to St. Francis, I felt good, I felt energized, I felt like a normal person again because at school, before I came to Power Project at school I used to get nervous. I used to get bullied. Since I came to Power Project, I felt safer at school with people. My confidence went up. Right now, if I hadn't went to the Power Project, I would not be able to stand here right now and testify. I would be scared and would have ran, but since I met Miss Jessica, Miss Jenna, Miss Tara, my friend, Darnell, I have plenty of friends there, my friend Asia, my friend, Robert, my friend, Ramell, we all have fun. My sister even goes there and they help her, too. It is, like, really fun, and with the future plans, we can have many more

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RESPONSES

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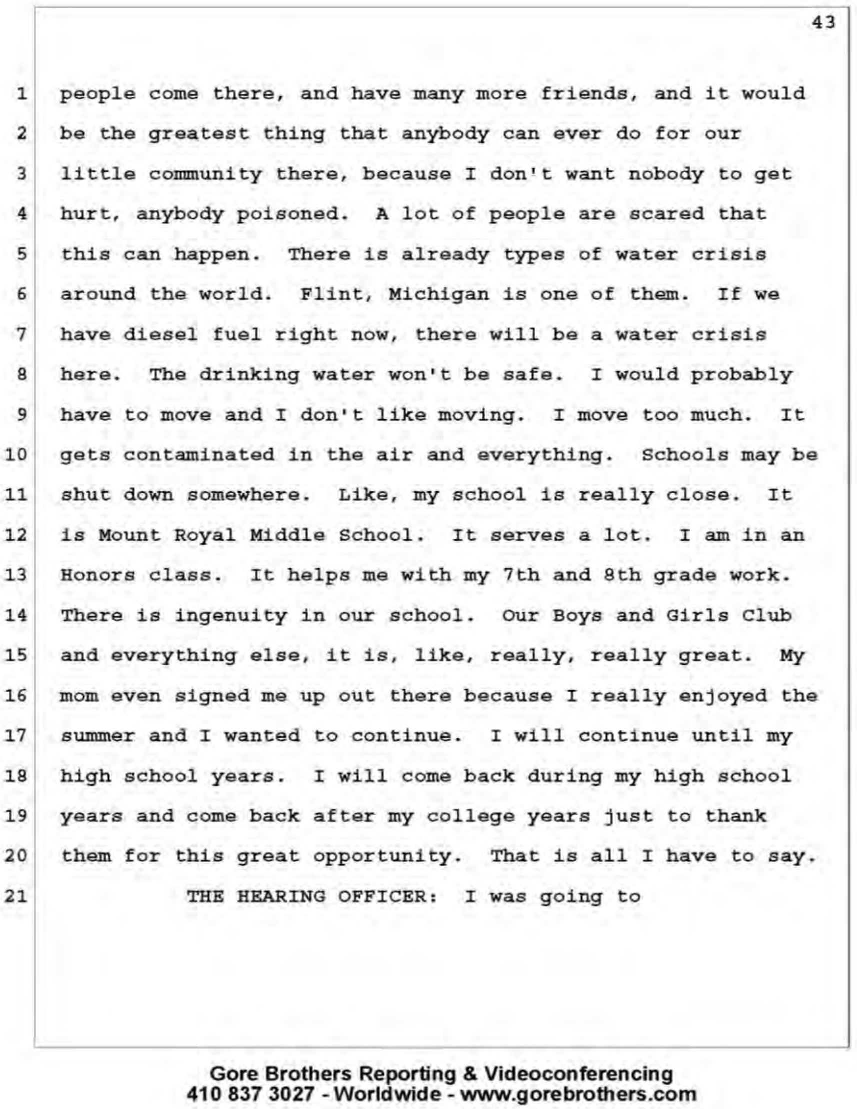
COMMENTS



people come there, and have many more friends, and it would
be the greatest thing that anybody can ever do for our
2 little community there, because I don't want nobody to get
hurt, anybody poisoned. A lot of people are scared that
this can happen. There is already types of water crisis
around the world. Flint, Michigan is one of them. If we
3 have diesel fuel right now, there will be a water crisis
here. The drinking water won't be safe. I would probably
4 have to move and I don't like moving. I move too much. It
gets contaminated in the air and everything. Schools may be
shut down somewhere. Like, my school is really close. It
is Mount Royal Middle School. It serves a lot. I am in an
Honors class. It helps me with my 7th and 8th grade work.
There is ingenuity in our school. Our Boys and Girls Club
and everything else, it is, like, really, really great. My
mom even signed me up out there because I really enjoyed the
summer and I wanted to continue. I will continue until my
high school years. I will come back during my high school
years and come back after my college years just to thank
them for this great opportunity. That is all I have to say.

THE HEARING OFFICER: I was going to

RESPONSES

Response to Comment 2:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

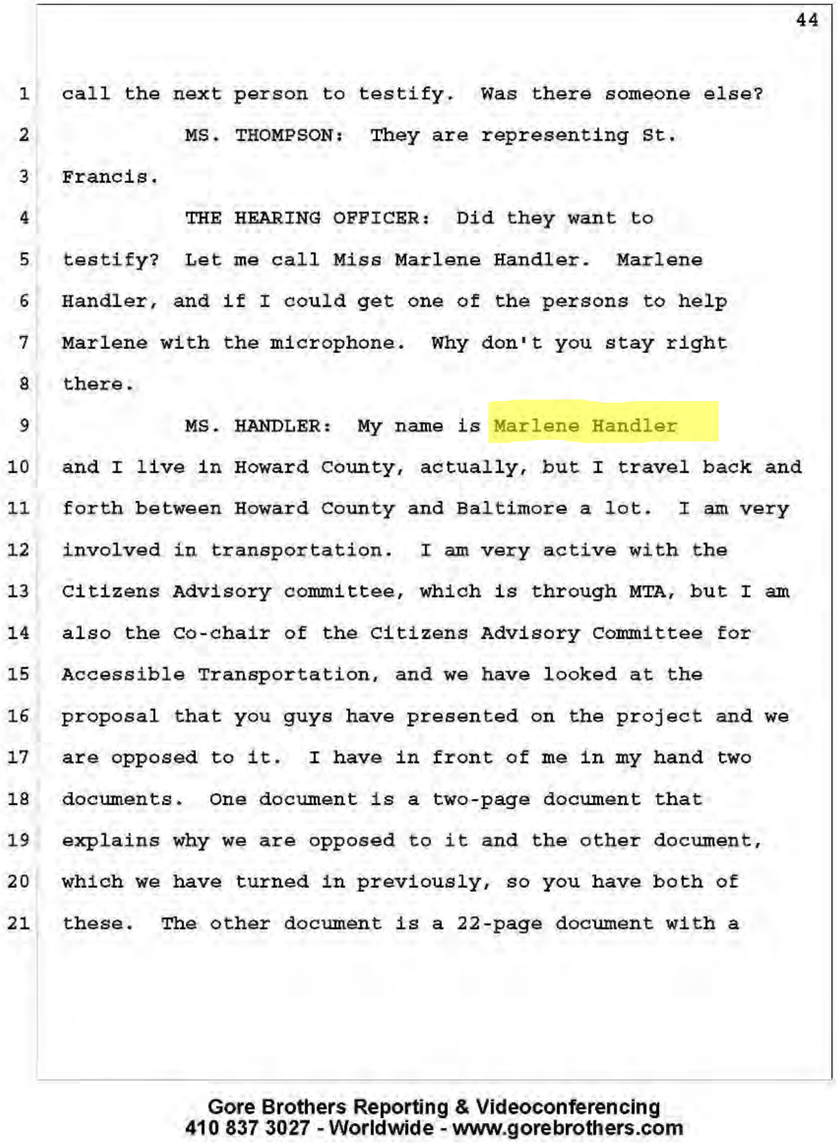
Response to Comment 3:
No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water.

Response to Comment 4:
Chapter VI of this FEIS specifically reviewed Air Quality, Water, Soil, and Hazardous Material impacts on Children's Health. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO$_x$, VOC, and PM$_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation facilities would cause, or substantially contribute to a violation of NAAQS, established by the USEPA.

COMMENTS

RESPONSES

DEIS Comment 155:



call the next person to testify. Was there someone else?

MS. THOMPSON: They are representing St. Francis.

THE HEARING OFFICER: Did they want to testify? Let me call Miss Marlene Handler. Marlene Handler, and if I could get one of the persons to help Marlene with the microphone. Why don't you stay right there.

MS. HANDLER: My name is Marlene Handler and I live in Howard County, actually, but I travel back and forth between Howard County and Baltimore a lot. I am very involved in transportation. I am very active with the Citizens Advisory committee, which is through MTA, but I am also the Co-chair of the Citizens Advisory Committee for Accessible Transportation, and we have looked at the proposal that you guys have presented on the project and we are opposed to it. I have in front of me in my hand two documents. One document is a two-page document that explains why we are opposed to it and the other document, which we have turned in previously, so you have both of these. The other document is a 22-page document with a 1

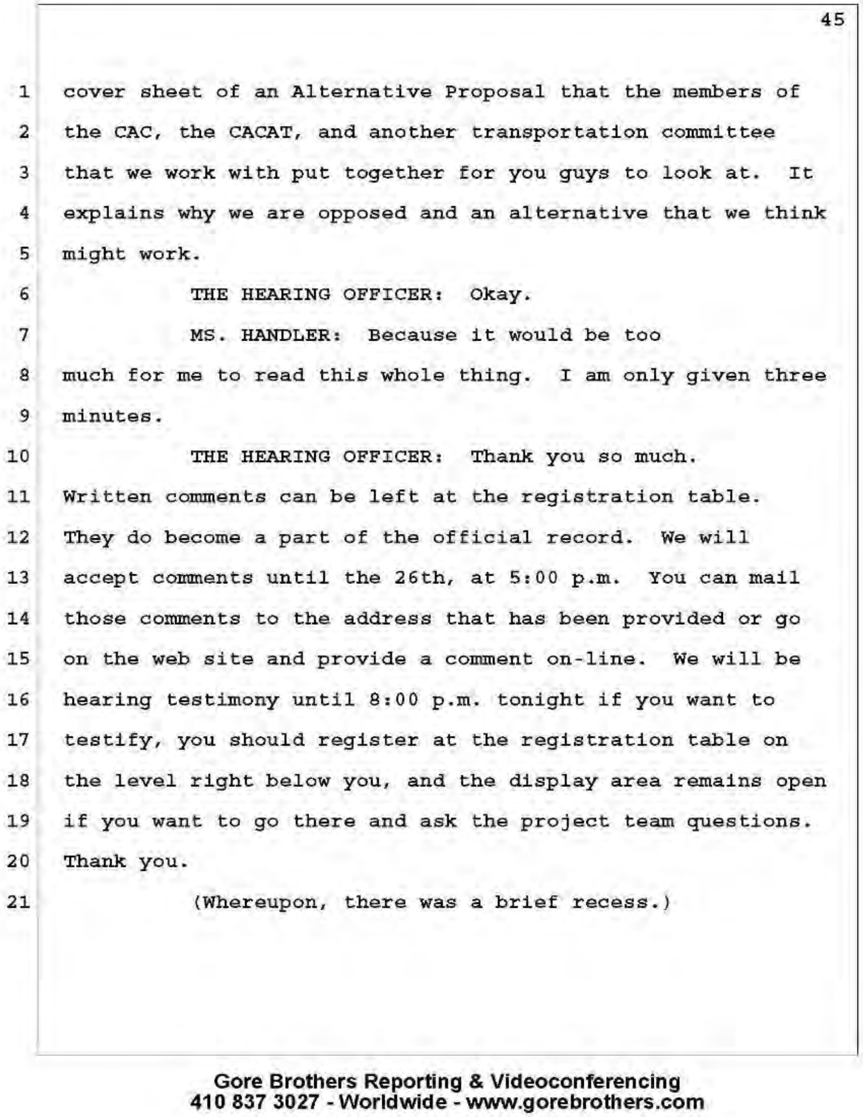
Response to Comment 1:
The report provided, *A Proposal to Unravel Baltimore's Tangled Rail Lines*, argues for a comprehensive system approach to rail planning in Baltimore and the mid-Atlantic region. It describes a list of projects and the order in which they should be completed. The report takes into consideration local, state, and regional transportation routes, and recommends new construction at a number of locations in order to relieve congestion and create opportunities for expanding rail service in the future.

While recommendations in the report focus on resolving issues at a regional level, they would not address or resolve the specific needs of the B&P Tunnel; therefore, the improvements suggested in the report would be beyond the purview of the Project. The existing B&P Tunnel is more than 140 years old and is approaching the end of its useful life. It is considered to be structurally deficient due to its age, the original design, and wear and tear. The Tunnel is also functionally obsolete and unable to meet current and future rail demands. For additional information regarding the purpose and need of the Project, please see **Chapter II** of this FEIS.

To review the September 2015 report in its entirety, please refer to **DEIS Comment #11**.

COMMENTS

RESPONSES



cover sheet of an Alternative Proposal that the members of the CAC, the CACAT, and another transportation committee that we work with put together for you guys to look at. It explains why we are opposed and an alternative that we think might work.

THE HEARING OFFICER: Okay.

MS. HANDLER: Because it would be too much for me to read this whole thing. I am only given three minutes.

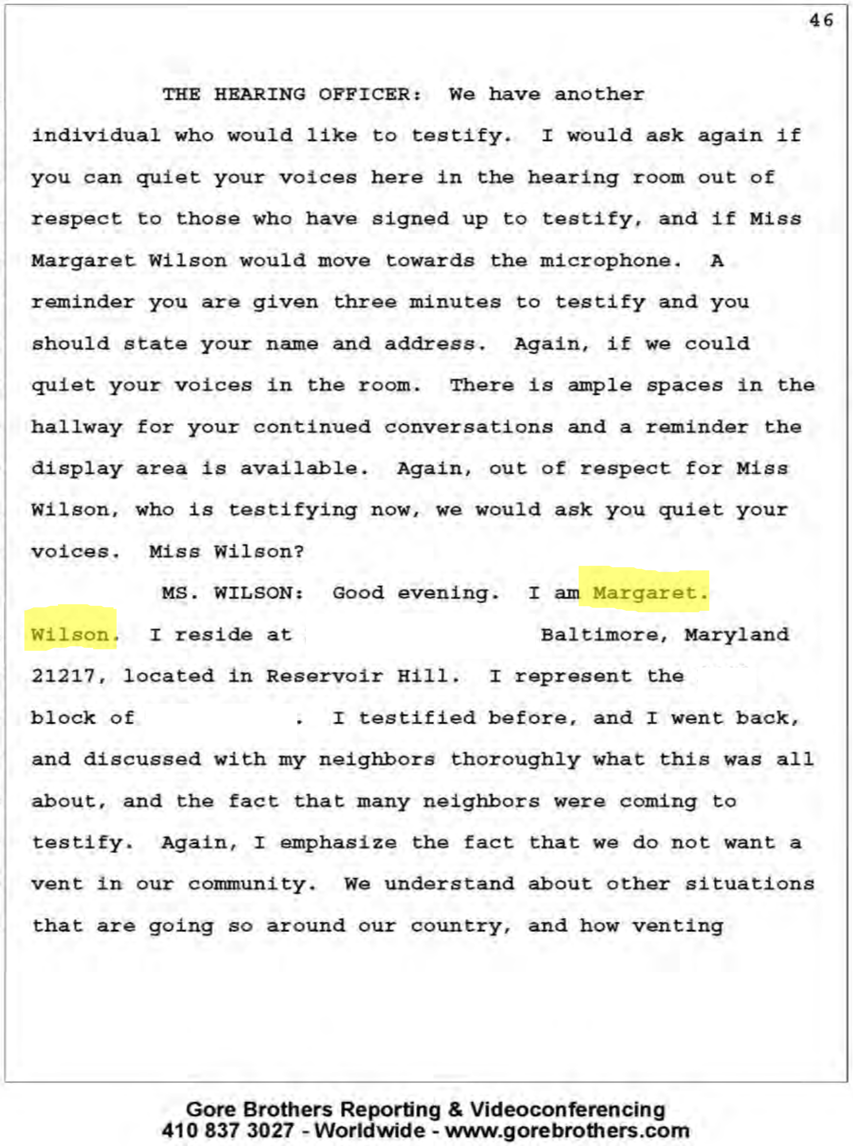
THE HEARING OFFICER: Thank you so much. Written comments can be left at the registration table. They do become a part of the official record. We will accept comments until the 26th, at 5:00 p.m. You can mail those comments to the address that has been provided or go on the web site and provide a comment on-line. We will be hearing testimony until 8:00 p.m. tonight if you want to testify, you should register at the registration table on the level right below you, and the display area remains open if you want to go there and ask the project team questions. Thank you.

(Whereupon, there was a brief recess.)

COMMENTS

RESPONSES

DEIS Comment 156:



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THE HEARING OFFICER: We have another individual who would like to testify. I would ask again if you can quiet your voices here in the hearing room out of respect to those who have signed up to testify, and if Miss Margaret Wilson would move towards the microphone. A reminder you are given three minutes to testify and you should state your name and address. Again, if we could quiet your voices in the room. There is ample spaces in the hallway for your continued conversations and a reminder the display area is available. Again, out of respect for Miss Wilson, who is testifying now, we would ask you quiet your voices. Miss Wilson?

MS. WILSON: Good evening. I am Margaret. Wilson. I reside at Baltimore, Maryland 21217, located in Reservoir Hill. I represent the block of . I testified before, and I went back, and discussed with my neighbors thoroughly what this was all about, and the fact that many neighbors were coming to testify. 1 Again, I emphasize the fact that we do not want a vent in our community. We understand about other situations that are going so around our country, and how venting

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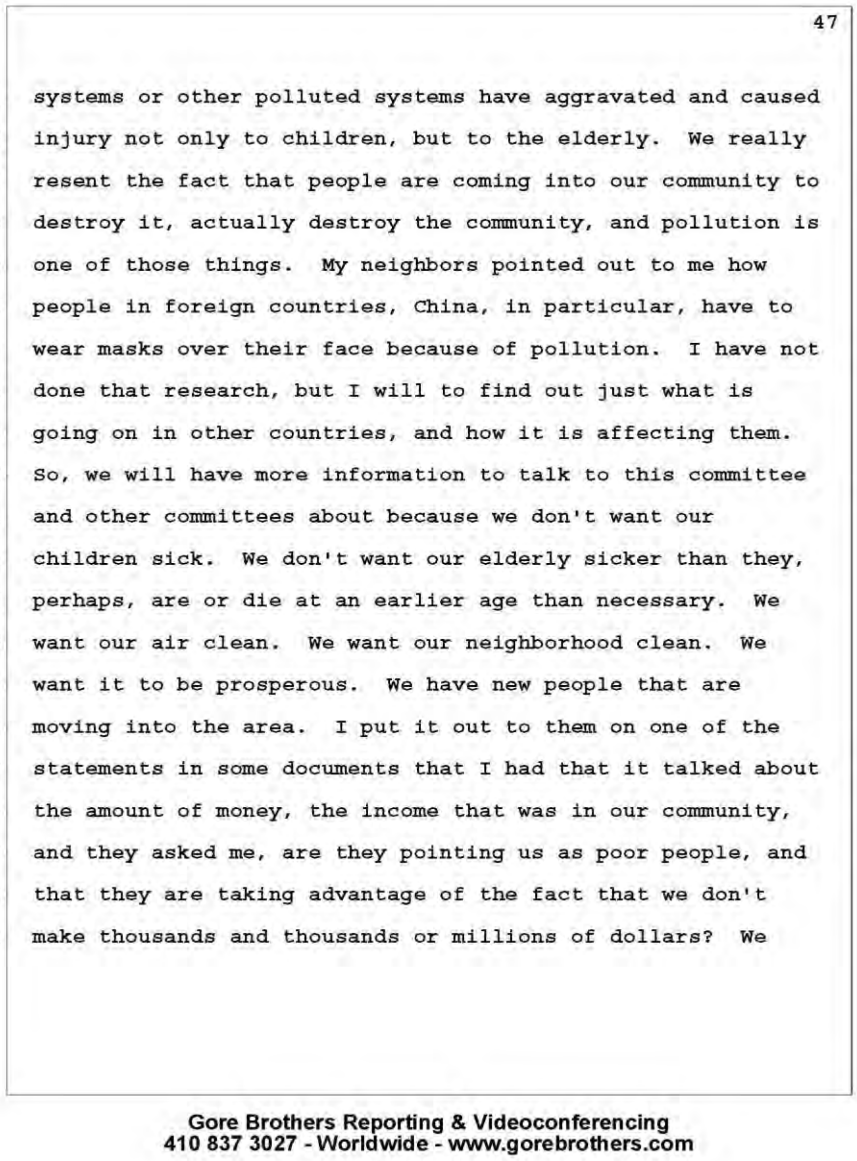
Response to Comment 1:

The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS



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2 systems or other polluted systems have aggravated and caused injury not only to children, but to the elderly. We really resent the fact that people are coming into our community to destroy it, actually destroy the community, and pollution is one of those things. My neighbors pointed out to me how people in foreign countries, China, in particular, have to wear masks over their face because of pollution. I have not done that research, but I will to find out just what is going on in other countries, and how it is affecting them. So, we will have more information to talk to this committee

3 and other committees about because we don't want our children sick. We don't want our elderly sicker than they, perhaps, are or die at an earlier age than necessary. We want our air clean. We want our neighborhood clean. We want it to be prosperous. We have new people that are moving into the area. I put it out to them on one of the statements in some documents that I had that it talked about the amount of money, the income that was in our community, and they asked me, are they pointing us as poor people, and that they are taking advantage of the fact that we don't make thousands and thousands or millions of dollars? We

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RESPONSES

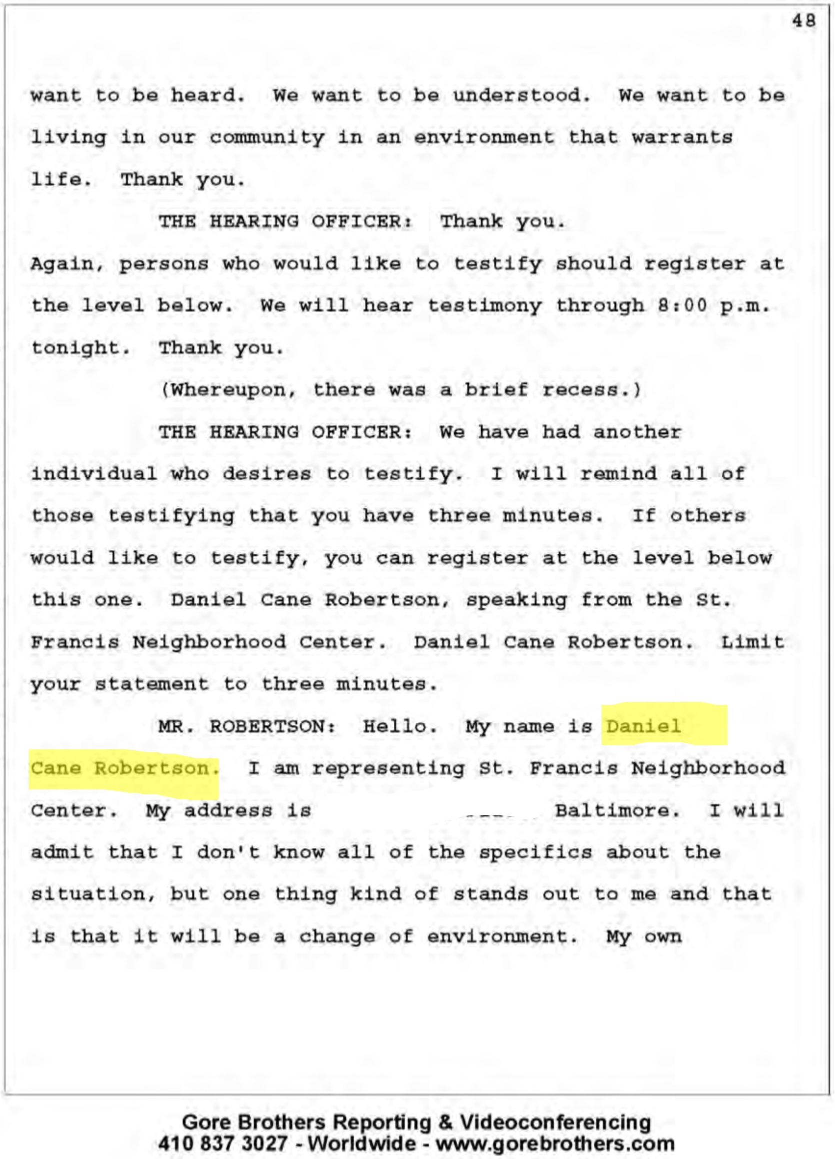
Response to Comment 2:
The emissions associated with the proposed ventilation facilities and the air exiting the portals would not result in adverse impacts to air quality. The maximum 1-hour NO_2 concentrations were predicted to be below the National Ambient Air Quality Standards (NAAQS) threshold, set to safeguard public health. Because the concentrations of NO_2 were within acceptable levels, all other criteria pollutant concentrations would be within acceptable levels of the NAAQS. **Chapter VI** provides details of the air quality analysis, including ventilation facility air dispersion modeling.

Response to Comment 3:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

Children's Health was assessed for Air Quality, Water, Soil and Hazardous Material and is described in **Chapter VI** of this FEIS. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA. No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water. Under the Preferred Alternative, 112 sites of concern were identified within 1 mile of the alignment; once type and extent of contamination and details of construction are known, potential risk and exposure can be assessed and appropriate documentation in place.

COMMENTS

DEIS Comment 157:



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want to be heard. We want to be understood. We want to be living in our community in an environment that warrants life. Thank you.

THE HEARING OFFICER: Thank you. Again, persons who would like to testify should register at the level below. We will hear testimony through 8:00 p.m. tonight. Thank you.

(Whereupon, there was a brief recess.)

THE HEARING OFFICER: We have had another individual who desires to testify. I will remind all of those testifying that you have three minutes. If others would like to testify, you can register at the level below this one. Daniel Cane Robertson, speaking from the St. Francis Neighborhood Center. Daniel Cane Robertson. Limit your statement to three minutes.

MR. ROBERTSON: Hello. My name is Daniel Cane Robertson. I am representing St. Francis Neighborhood Center. My address is [redacted] Baltimore. I will admit that I don't know all of the specifics about the situation, but one thing kind of stands out to me and that is that it will be a change of environment. My own 1

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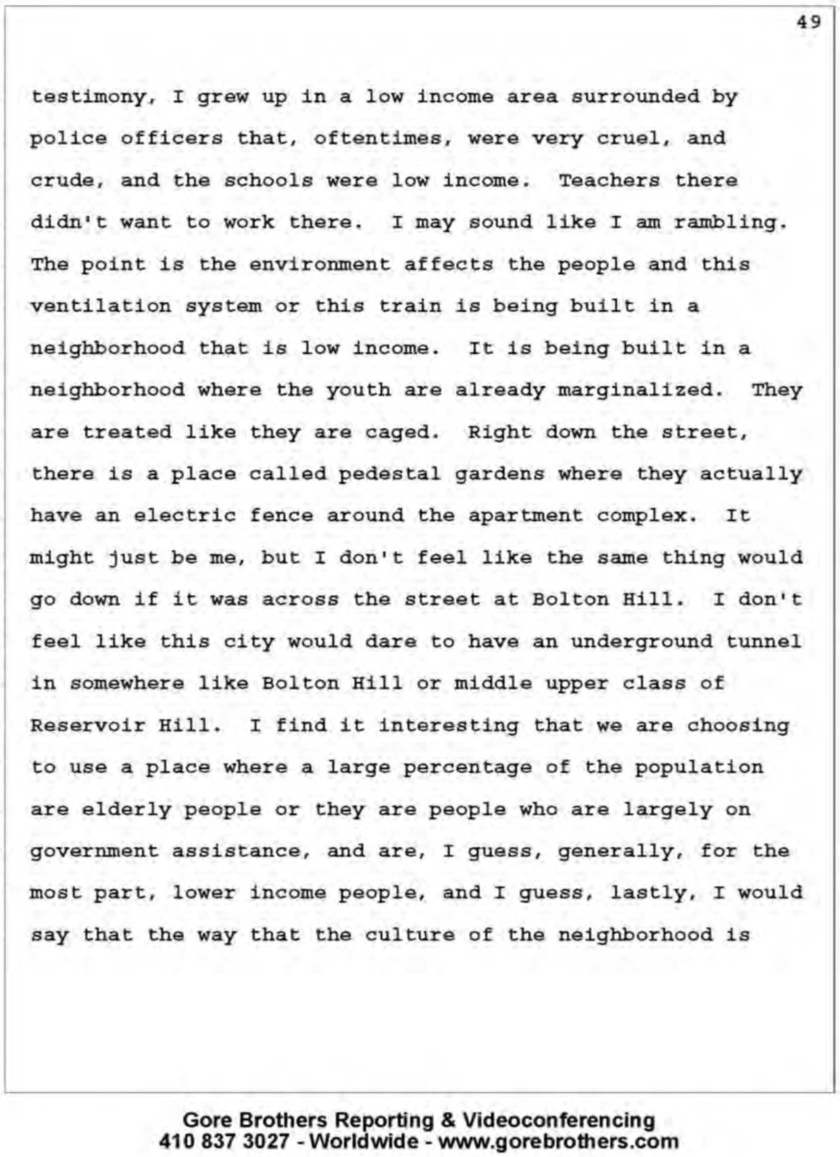
RESPONSES

Response to Comment 1:
Potential environmental impacts to the Study Area communities as a result of the Project are documented in **Chapter VI** of the FEIS. For all build alternatives, the majority of the Project would be constructed underground, and north portal construction (including north ventilation facilities) would take place within existing transportation land uses. Impacts would primarily occur due to the construction of the south portal and the Intermediate Ventilation Facility.

For Alternative 3A, community impact would occur due to the estimated displacement of nine businesses. For the Preferred Alternative, community impacts would be due to the estimated displacement of 22 residential buildings, 13 businesses, and four places of worship. For Alternative 3C, community impacts would be due to the estimated displacement of 12 residential buildings, 16 businesses, and 1 fire station. The Project Team is working with community groups and community members to determine the most effective mitigation measures. These efforts are ongoing and are found in **Chapter VII**.

COMMENTS



testimony, I grew up in a low income area surrounded by police officers that, oftentimes, were very cruel, and crude, and the schools were low income. Teachers there didn't want to work there. I may sound like I am rambling. The point is the environment affects the people and this

2 ventilation system or this train is being built in a neighborhood that is low income. It is being built in a neighborhood where the youth are already marginalized. They are treated like they are caged. Right down the street, there is a place called pedestal gardens where they actually have an electric fence around the apartment complex. It might just be me, but I don't feel like the same thing would go down if it was across the street at Bolton Hill.

3 I don't feel like this city would dare to have an underground tunnel in somewhere like Bolton Hill or middle upper class of Reservoir Hill.

I find it interesting that we are choosing to use a place where a large percentage of the population are elderly people or they are people who are largely on government assistance, and are, I guess, generally, for the most part, lower income people, and I guess, lastly, I would say that the way that the culture of the neighborhood is

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RESPONSES

Response to Comment 2:
Under Executive Order (12898), federal agencies are required to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Department of Transportation's environmental justice initiatives accomplish this goal by involving the potentially affected public in developing transportation projects that fit harmoniously within their communities without sacrificing safety or mobility.

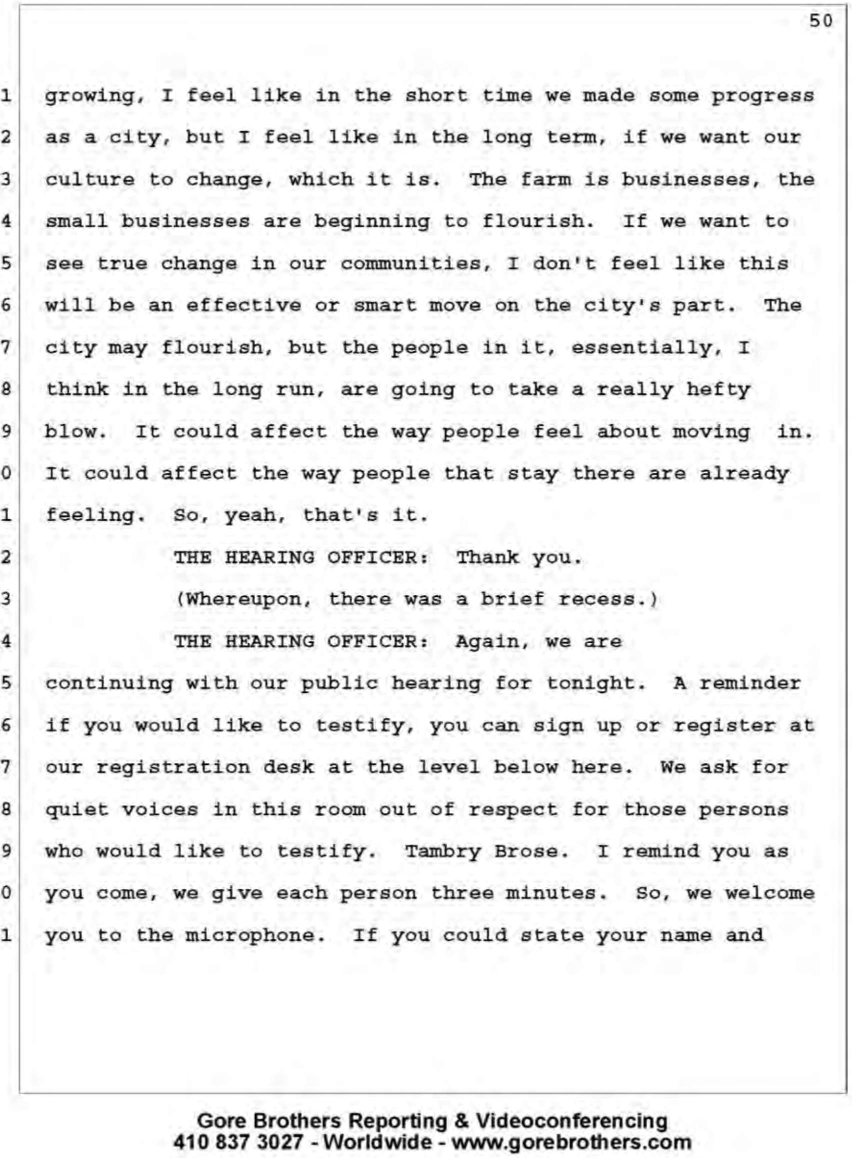
The B&P Project Team has performed an Environmental Justice (EJ) analysis consistent with EO 12898 and subsequent USDOT Orders. A critical component of the Executive Order on environmental justice is public outreach. The Project Team has conducted extensive engagement with the community throughout the development of the Project, as detailed in **Chapter VIII**. Meetings were held with local officials; public, local, and regional organizations; government agencies; and representatives of affected EJ communities along the evaluated alternative alignment. Three Public Open Houses, as well as ten community meetings, have been held where the public was given the opportunity to learn about the Project development in-person, ask questions, and engage in discussions with the Project Team. The Project Team also attended several local community association meetings with environmental justice populations to present information on the Project and respond to questions in smaller, neighborhood-focused settings. Additionally, the Project Team attended meetings at the request of the following organizations: Residents Against the Tunnel (RATT) on May 24, 2016 at the Beth AM Synagogue; No Boundaries Coalition on June 14, 2016 at St. Peter's Clavier Church; and Baltimore City Public Schools on June 16, 2016 at John Eager Howard Elementary School.

Direct mailings to residents in the Study Area included property owners within one-quarter mile of the build alternatives, as well as additional properties within the south portal area that could potentially be impacted by the Project. The Project website continues to post meeting notices, Project information, and avenues to comment. Publications including print advertisements, newsletters, and fliers have been distributed at transit hub locations, educational facilities, libraries, senior homes, shopping centers, laundromats, places of worship, and other organizations.

The Project Team studied community composition in the areas affected by the build alternatives. It reviewed data from the American Community Survey 2009-2013 for minority and low-income populations, the National Center for Educational Statistics, government-assisted housing programs, historical references, city officials, field visits, and community meetings. From this information, the Project Team learned that of the 77 Census Block Groups in the Study Area, 72 contain minority race and/or ethnicity populations of 50 percent or more. Thirty-six Census Block Groups contain 32 percent or higher low-income households. More information can be found in **Chapter V** of this FEIS.

Because the build alternatives are located almost entirely within EJ communities within the Study Area, the effects would be borne primarily by minority and low-income populations.

COMMENTS



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4 growing, I feel like in the short time we made some progress as a city, but I feel like in the long term, if we want our culture to change, which it is. The farm is businesses, the small businesses are beginning to flourish. If we want to see true change in our communities, I don't feel like this will be an effective or smart move on the city's part. The city may flourish, but the people in it, essentially, I think in the long run, are going to take a really hefty blow. It could affect the way people feel about moving in. It could affect the way people that stay there are already feeling. So, yeah, that's it.

THE HEARING OFFICER: Thank you.

(Whereupon, there was a brief recess.)

THE HEARING OFFICER: Again, we are continuing with our public hearing for tonight. A reminder if you would like to testify, you can sign up or register at our registration desk at the level below here. We ask for quiet voices in this room out of respect for those persons who would like to testify. Tambry Brose. I remind you as you come, we give each person three minutes. So, we welcome you to the microphone. If you could state your name and

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RESPONSES

For the Preferred Alternative, neighborhood and community facility impacts would primarily occur at the north portal within the Jones Falls area neighborhood, the south portal within the Midtown-Edmondson neighborhood, and the Intermediate Ventilation Facility location within the Reservoir Hill neighborhood. The Preferred Alternative would result in 22 residential and 6 commercial property displacements. Four places of worship in the Midtown-Edmondson neighborhood would be displaced. There would be high and adverse effects to EJ populations from noise, as well as medium and adverse effects to EJ populations from visual quality due to the placement of a ventilation facility. Alternative 3A would displace no residential buildings, and Alternative 3C would displace 12 residential buildings.

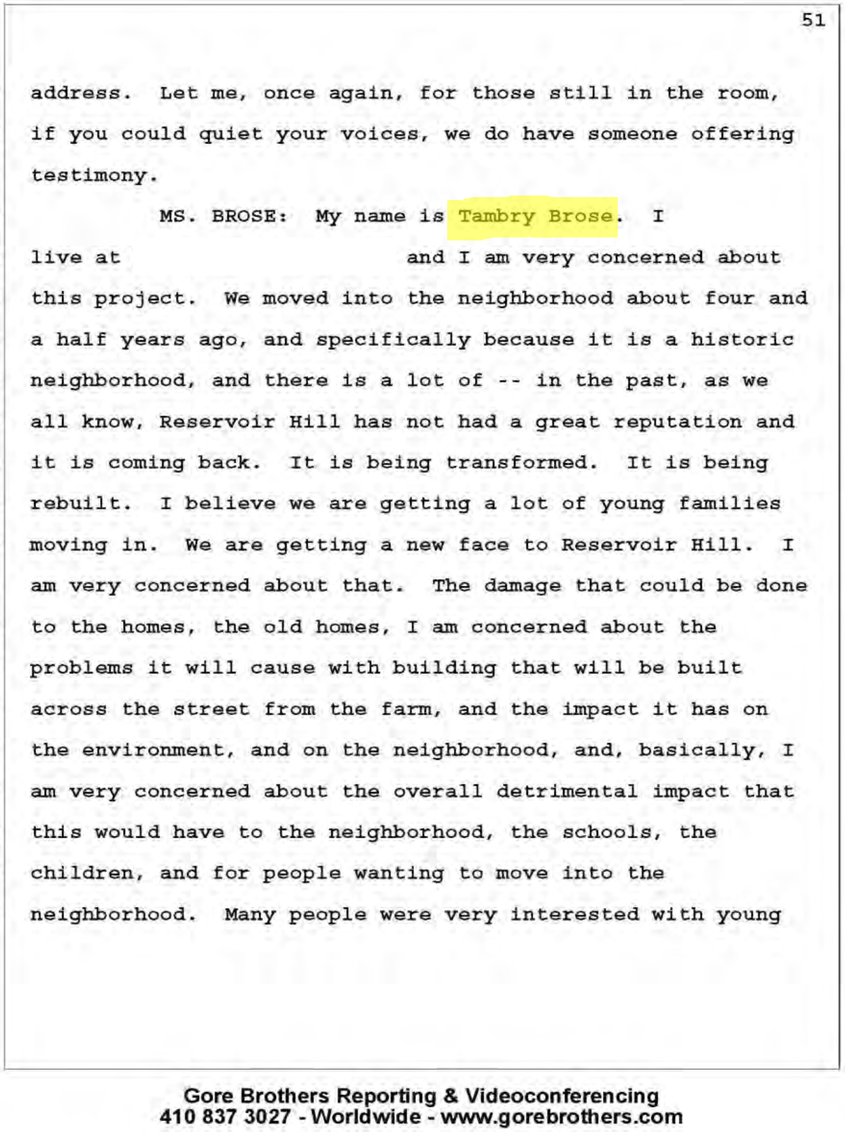
As the Project is advanced to the design phase and if funding is available, the Project sponsor would carry out mitigation measures and would continue to work with the community in order to minimize impacts. The vast majority of this Project will be underground which would reduce the overall impact to the communities. The Project sponsor will also establish a fund to support community development within affected communities, as well as a fund for maintenance of and improvement to publicly-owned parks and recreational facilities within ¼ mile of the Project alignment. The Project will coordinate with local job training organizations to facilitate targeted job training and include construction contract goals for workers of social and economic disadvantage. The Project sponsor will also provide relocation protections to property owners and tenants pursuant to the Uniform Relocation Act. For more information, please refer to **Chapter VII** of this FEIS.

Response to Comment 3:
The existing B&P Tunnel tracks are in Bolton Hill. Options as to where the new B&P Tunnel should reside are limited. Due to the geography and the shallowness of the area beneath Bolton Hill, this area was not a feasible option for the proposed Tunnel, whereas the area underneath Reservoir Hill is deeper and more practicable.

Response to Comment 4:
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

COMMENTS

DEIS Comment 158:



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address. Let me, once again, for those still in the room, if you could quiet your voices, we do have someone offering testimony.

MS. BROSE: My name is Tambry Brose. I live at and I am very concerned about this project. We moved into the neighborhood about four and a half years ago, and specifically because it is a historic neighborhood, and there is a lot of -- in the past, as we all know, Reservoir Hill has not had a great reputation and it is coming back. It is being transformed. It is being rebuilt. I believe we are getting a lot of young families moving in. We are getting a new face to Reservoir Hill. I
1 am very concerned about that. The damage that could be done to the homes, the old homes, I am concerned about the problems it will cause with building that will be built
2 across the street from the farm, and the impact it has on the environment, and on the neighborhood, and, basically, I am very concerned about the overall detrimental impact that this would have to the neighborhood, the schools, the
3 children, and for people wanting to move into the neighborhood. Many people were very interested with young

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RESPONSES

Response to Comment 1:

The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

Response to Comment 2:

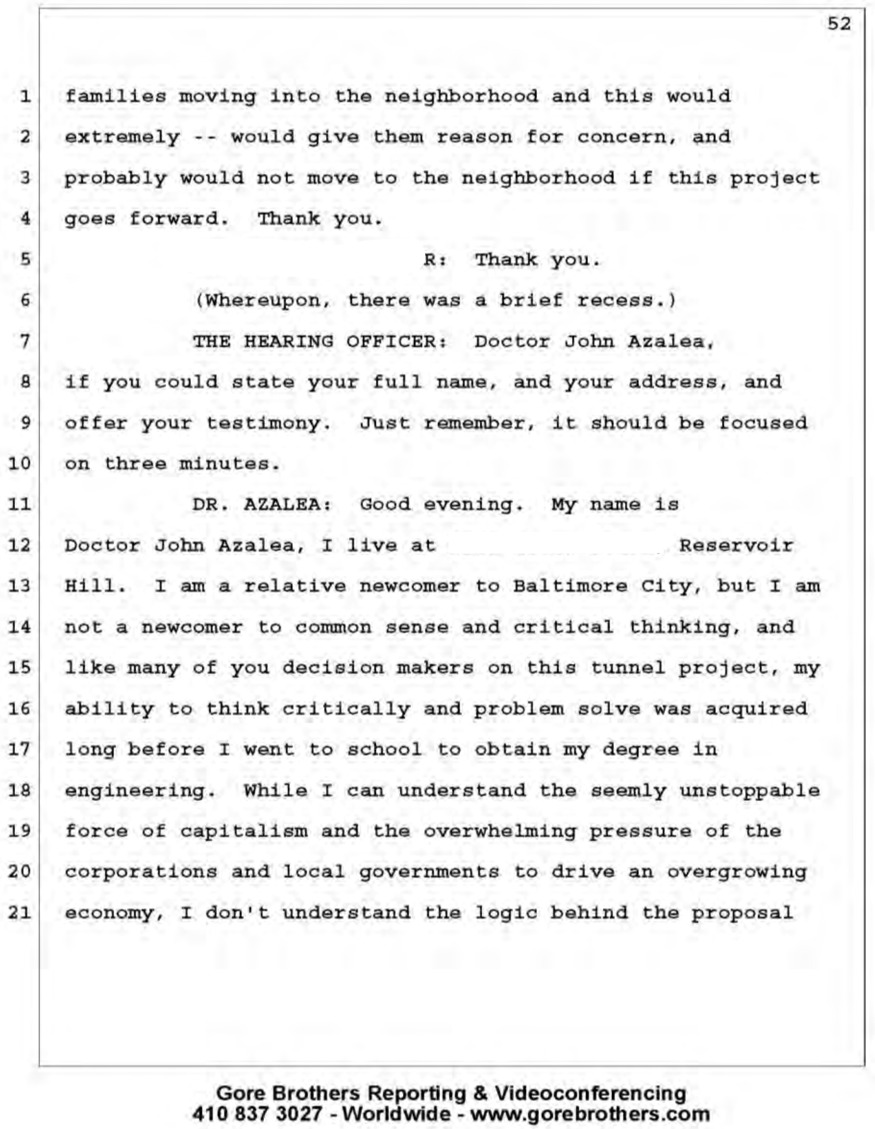
The preferred location of the Intermediate Ventilation Facility is 900-940 West North Avenue (including 1000 Linden Avenue), and not the Whitelock Street or Brookfield Avenue sites. The Project Team considered additional locations beyond the Whitelock Street and Brookfield Avenue sites based on community input and the need to reduce environmental impacts. The North Avenue site is more commercial in nature than the Whitelock Street site, and a ventilation facility would blend better with the land use in that corridor. The ventilation facility would be designed to fit into the aesthetic context of the surrounding area. Ventilation facility construction has the potential to affect community character with noise impacts and displacement of residences and community facilities, as described in **Chapter VI**. Mitigation efforts are ongoing with community groups and individual community members to identify potential mitigation measures, which are documented in this FEIS in **Chapter VII**.

The economic and housing markets in Reservoir Hill are subject to many variables and externalities outside of the Project. This fact makes it virtually impossible to predict or measure the future economic impact of the Project on the Reservoir Hill community.

Response to Comment 3:

Children's Health was assessed for Air Quality, Water, Soil and Hazardous Material and is described in **Chapter VI** of this FEIS. The build alternatives would pose no health or safety risks that would disproportionately affect children. The build alternatives would have no significant effects on air quality, as the net change in emissions of NO_x, VOC, and $PM_{2.5}$ between 2040 No-Build and the 2040 Build scenario would be below *de minimis* levels (levels too low to measure or to have meaningful environmental or health impacts). In accordance with the General Conformity Thresholds, it is unlikely that emissions associated with the ventilation plants would cause, or substantially contribute to a violation of NAAQS, established by the USEPA. No sole source aquifers, active water supply reservoirs, or wells are located near the Project. The Project will have no impact to potable water.

COMMENTS



families moving into the neighborhood and this would extremely -- would give them reason for concern, and probably would not move to the neighborhood if this project goes forward. Thank you.

R: Thank you.

(Whereupon, there was a brief recess.)

THE HEARING OFFICER: Doctor John Azalea, if you could state your full name, and your address, and offer your testimony. Just remember, it should be focused on three minutes.

DR. AZALEA: Good evening. My name is Doctor John Azalea, I live at Reservoir Hill. I am a relative newcomer to Baltimore City, but I am not a newcomer to common sense and critical thinking, and like many of you decision makers on this tunnel project, my ability to think critically and problem solve was acquired long before I went to school to obtain my degree in engineering. While I can understand the seemly unstoppable force of capitalism and the overwhelming pressure of the corporations and local governments to drive an overgrowing economy, I don't understand the logic behind the proposal

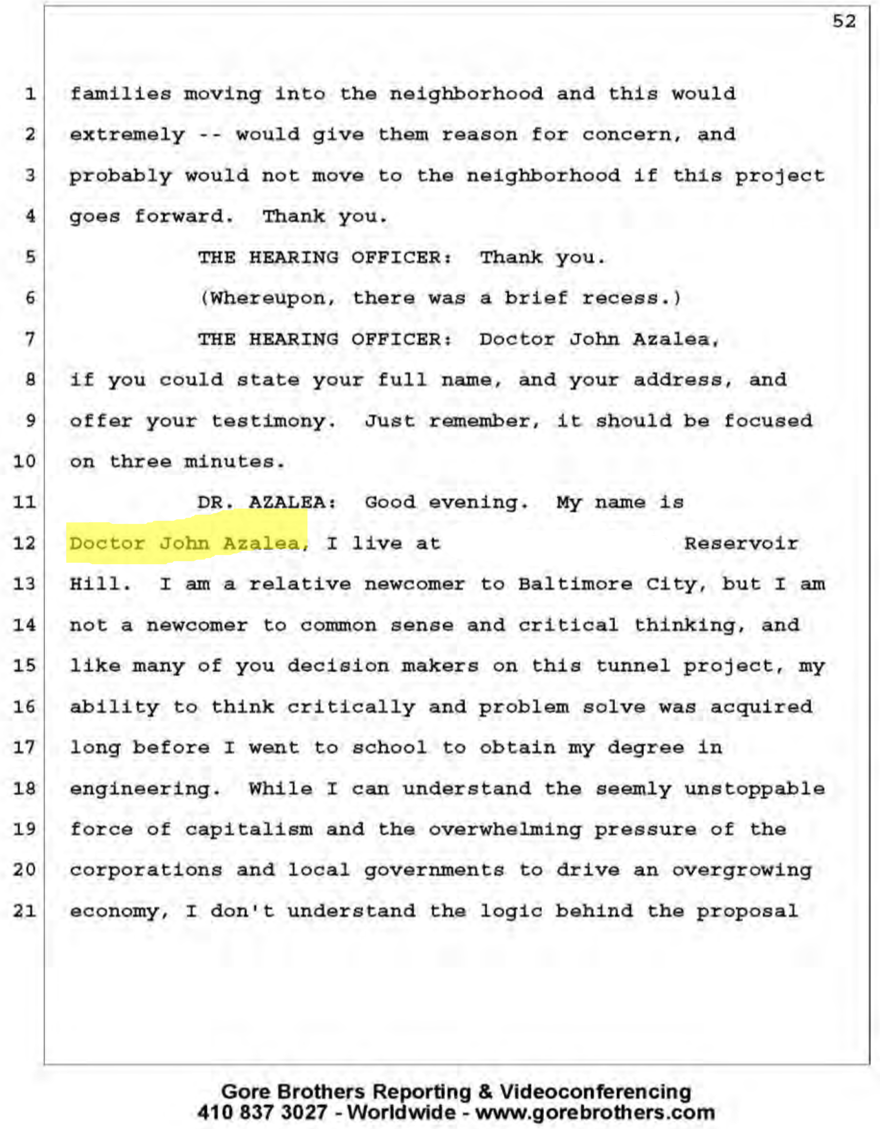
RESPONSES

Under the Preferred Alternative, 112 sites of concern were identified within 1 mile of the alignment; once type and extent of contamination and details of construction are known, potential risk and exposure can be assessed and appropriate documentation in place.

COMMENTS

RESPONSES

DEIS Comment 159:



families moving into the neighborhood and this would extremely -- would give them reason for concern, and probably would not move to the neighborhood if this project goes forward. Thank you.

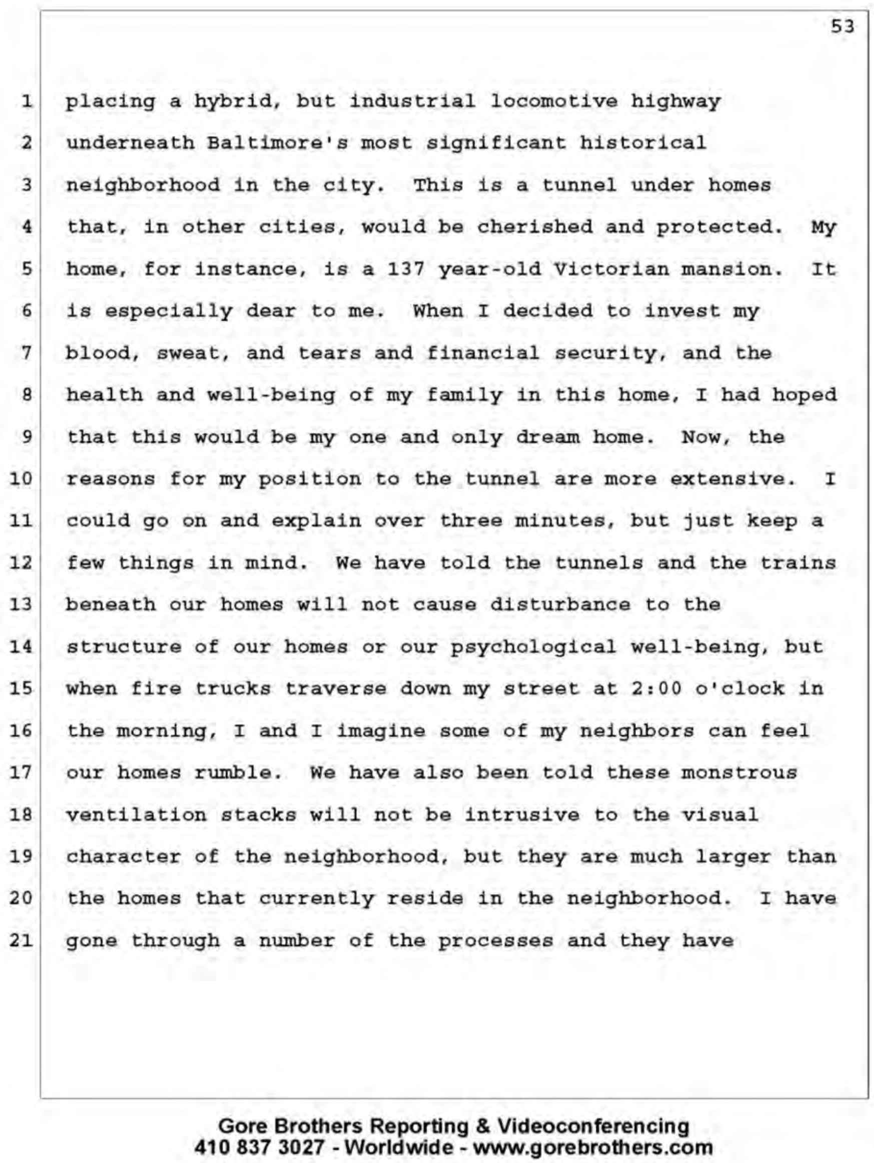
THE HEARING OFFICER: Thank you.

(Whereupon, there was a brief recess.)

THE HEARING OFFICER: Doctor John Azalea, if you could state your full name, and your address, and offer your testimony. Just remember, it should be focused on three minutes.

DR. AZALEA: Good evening. My name is Doctor John Azalea, I live at Reservoir Hill. I am a relative newcomer to Baltimore City, but I am not a newcomer to common sense and critical thinking, and like many of you decision makers on this tunnel project, my ability to think critically and problem solve was acquired long before I went to school to obtain my degree in engineering. While I can understand the seemly unstoppable force of capitalism and the overwhelming pressure of the corporations and local governments to drive an overgrowing economy, I don't understand the logic behind the proposal

COMMENTS



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1 placing a hybrid, but industrial locomotive highway underneath Baltimore's most significant historical neighborhood in the city. This is a tunnel under homes that, in other cities, would be cherished and protected. My home, for instance, is a 137 year-old Victorian mansion. It is especially dear to me. When I decided to invest my blood, sweat, and tears and financial security, and the health and well-being of my family in this home, I had hoped that this would be my one and only dream home. Now, the reasons for my position to the tunnel are more extensive. I could go on and explain over three minutes, but just keep a few things in mind. We have told the tunnels and the trains

2 beneath our homes will not cause disturbance to the structure of our homes or our psychological well-being, but when fire trucks traverse down my street at 2:00 o'clock in the morning, I and I imagine some of my neighbors can feel our homes rumble. We have also been told these monstrous

3 ventilation stacks will not be intrusive to the visual character of the neighborhood, but they are much larger than the homes that currently reside in the neighborhood. I have gone through a number of the processes and they have

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RESPONSES

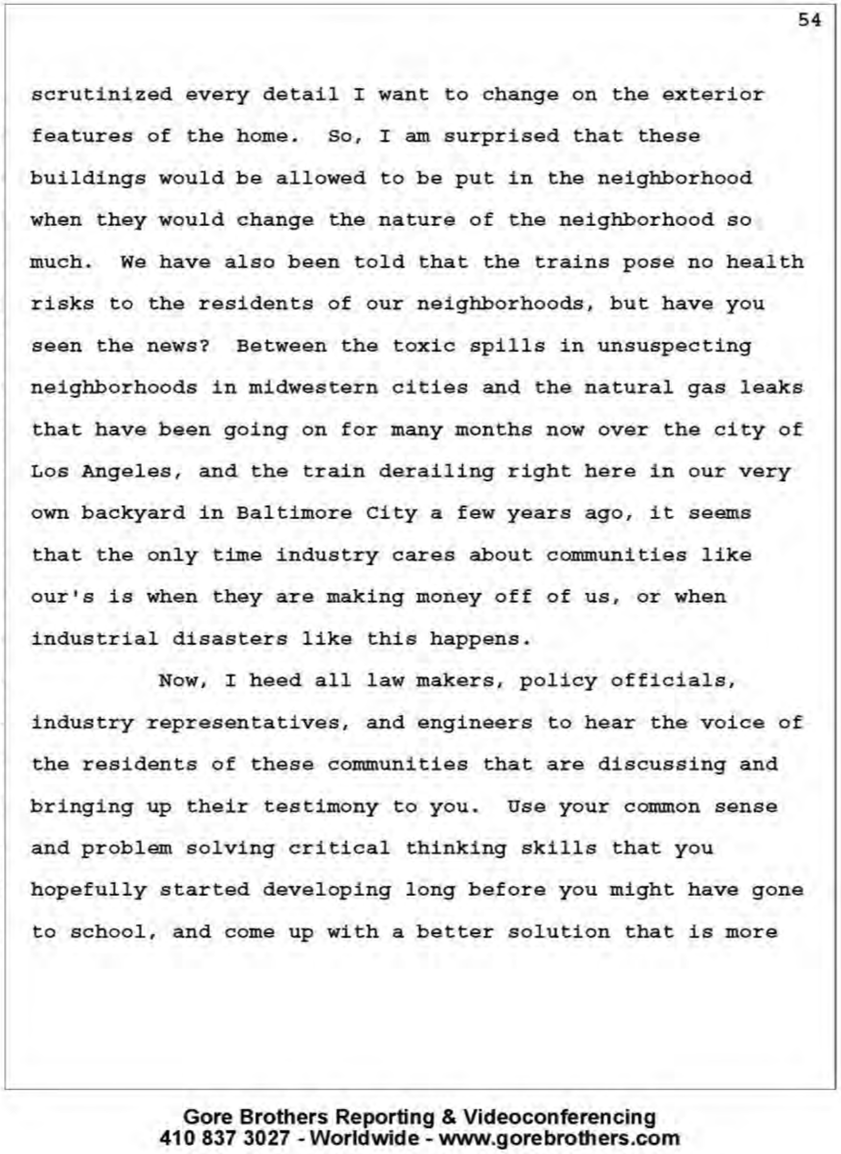
Response to Comment 1:
As described in this FEIS, the initial range of alternatives was identified based on previous studies and during the preliminary alternatives development phase of the Project. A total of 16 preliminary alternatives were identified, including Alternative 1: No-Build, Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, and 14 new location alternatives. The 14 new location alternatives included five alternatives based on previous studies (Alternatives 3 through 7), and nine additional alternatives identified by this Project (Alternatives 8 through 16). The preliminary alternatives screening process was applied to all of the 16 preliminary alternatives with the exception of Alternative 1: No-Build and Alternative 2: Restore/Rehabilitate Existing B&P Tunnel, in accordance with Council on Environmental Quality regulations (40 CFR Part 1502.14(d)).

Alternatives 3 through 16 were first screened for fatal flaws that clearly rendered the alternative not feasible or unreasonable. An alternative was considered to have a fatal flaw if it did not meet the Project's Purpose and Need, did not utilize existing infrastructure at Baltimore Penn Station and the Gwynns Falls Bridge, or would result in an unacceptable engineering issue that could not be reasonably avoided or solved during the early stages of alternatives development. Alternative 5: Route 40, along with Alternatives 6, 7, 14, 15, and 16 were all found to have a fatal flaw. **Chapter III** of the FEIS details the basis of elimination or retention for each alternative.

Since the publication of the DEIS, Alternative 3B was selected as the Preferred Alternative. Alternative 3B was advanced through a comprehensive alternatives development and evaluation process that incorporated input from the public as well as federal, state and local government agencies. These changes resulted in sizeable reductions in impacts, particularly to residences and historic resources. **Chapter III** in this FEIS provides a comparison of the Preferred Alternative to the other alternatives carried forward based on engineering and environmental evaluation criteria. Further justification for the selection of Alternative 3B as the Preferred Alternative is described in **Chapter IV** of this FEIS.

The build alternatives would impact the Midtown-Edmondson Historic District. Construction of the Preferred Alternative would require demolition of nine historic properties, located in the Midtown-Edmondson neighborhood. The build alternatives would also impact the Reservoir Hill Historic District as a result of the Intermediate Ventilation Facility. The Intermediate Ventilation Facility would be constructed along 900-940 West North Avenue (including 1000 Linden Avenue), which would constitute a Section 4(f) use resulting from demolition of a contributing resource. Further analysis of historic properties is found in **Chapter VI** of this FEIS. Potential mitigation strategies include historic property documentation, establishment of a historic properties preservation fund, and interpretive signage. More information on potential Section 4(f) mitigation measures are available in **Chapter VI and Chapter VII**.

COMMENTS



scrutinized every detail I want to change on the exterior features of the home. So, I am surprised that these buildings would be allowed to be put in the neighborhood when they would change the nature of the neighborhood so much.

4 We have also been told that the trains pose no health risks to the residents of our neighborhoods, but have you seen the news? Between the toxic spills in unsuspecting neighborhoods in midwestern cities and the natural gas leaks that have been going on for many months now over the city of Los Angeles, and the train derailing right here in our very own backyard in Baltimore City a few years ago, it seems that the only time industry cares about communities like our's is when they are making money off of us, or when industrial disasters like this happens.

5 Now, I heed all law makers, policy officials, industry representatives, and engineers to hear the voice of the residents of these communities that are discussing and bringing up their testimony to you. Use your common sense and problem solving critical thinking skills that you hopefully started developing long before you might have gone to school, and come up with a better solution that is more

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RESPONSES

Response to Comment 2:
The Project Team has studied potential impacts to the housing stock in the Study Area and determined that the estimated vibration is not sufficient to damage fragile houses, including those constructed on rubble foundations. A pre-construction survey is proposed at select buildings in the Study Area which will be documented in written reports and photographs. These buildings would be selected based on a number of factors, which include sites where vibration or ground-borne noise impacts are predicted, or sites identified by the community as hyper-sensitive or otherwise of interest. If a property owner believes structural damage has occurred as a result of vibration during construction, he or she would be able to file a claim and the property would be compared to its pre-construction condition. If the structural damage is determined to have been caused by the Project construction activities rather than other factors (such as normal deterioration due to old age), the property owner would be compensated for the cost of repairs.

Response to Comment 3:
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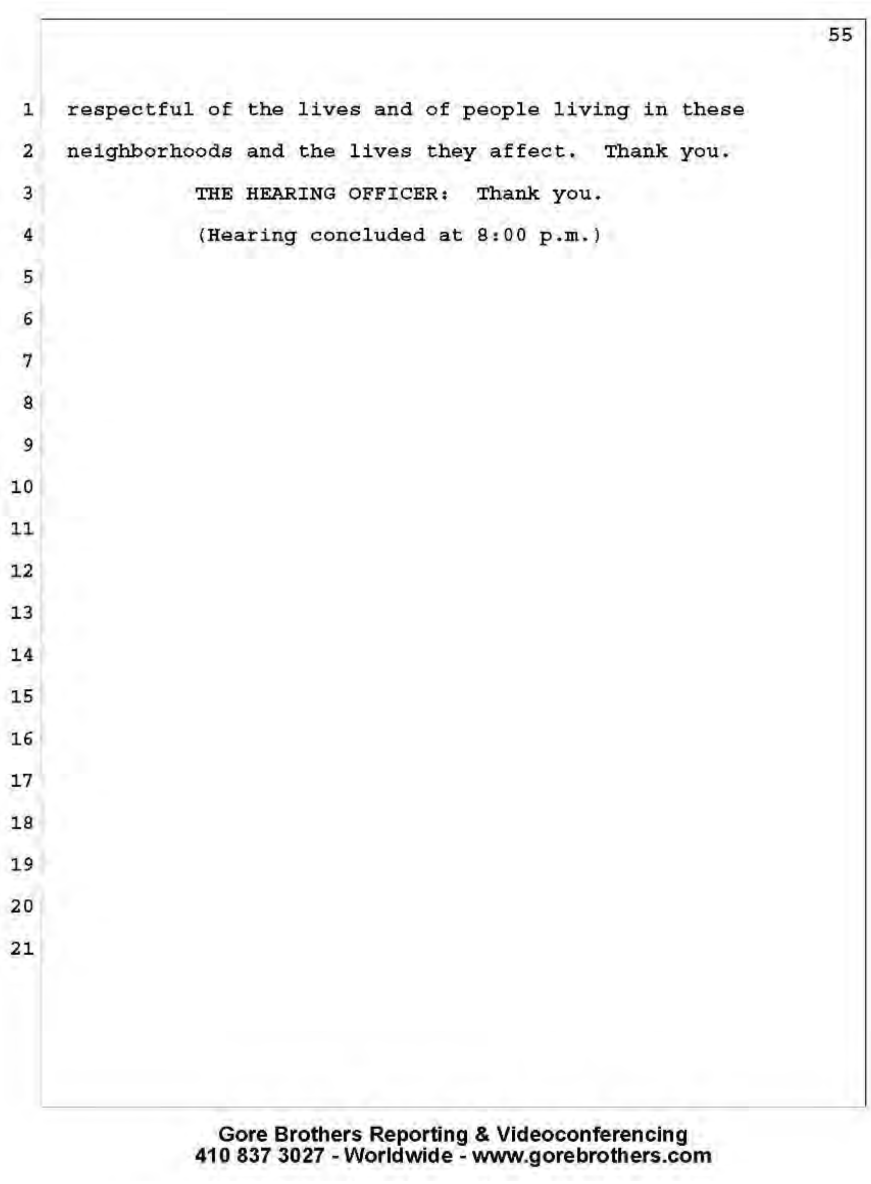
Response to Comment 4:
No impacts to public health are anticipated from construction of the build alternatives. The build alternatives would conform to federal and state air quality standards and if a public health and safety concern is identified during hazardous materials investigations, provisions within the investigation Health and Safety Plan will be implemented and regulatory authorities notified to appropriately mitigate the hazardous material concerns.

Response to Comment 5:
The Project Team has engaged in extensive public outreach throughout the development of the project, including holding three public open houses and ten community meetings where the public was given the opportunity to learn about the project and engage in discussion with the Project Team. In addition to these meetings, the Project Team is working with community groups and individual community members to determine the most effective mitigation measures to address issues concerning community impact, noise

COMMENTS



respectful of the lives and of people living in these neighborhoods and the lives they affect. Thank you.

THE HEARING OFFICER: Thank you.

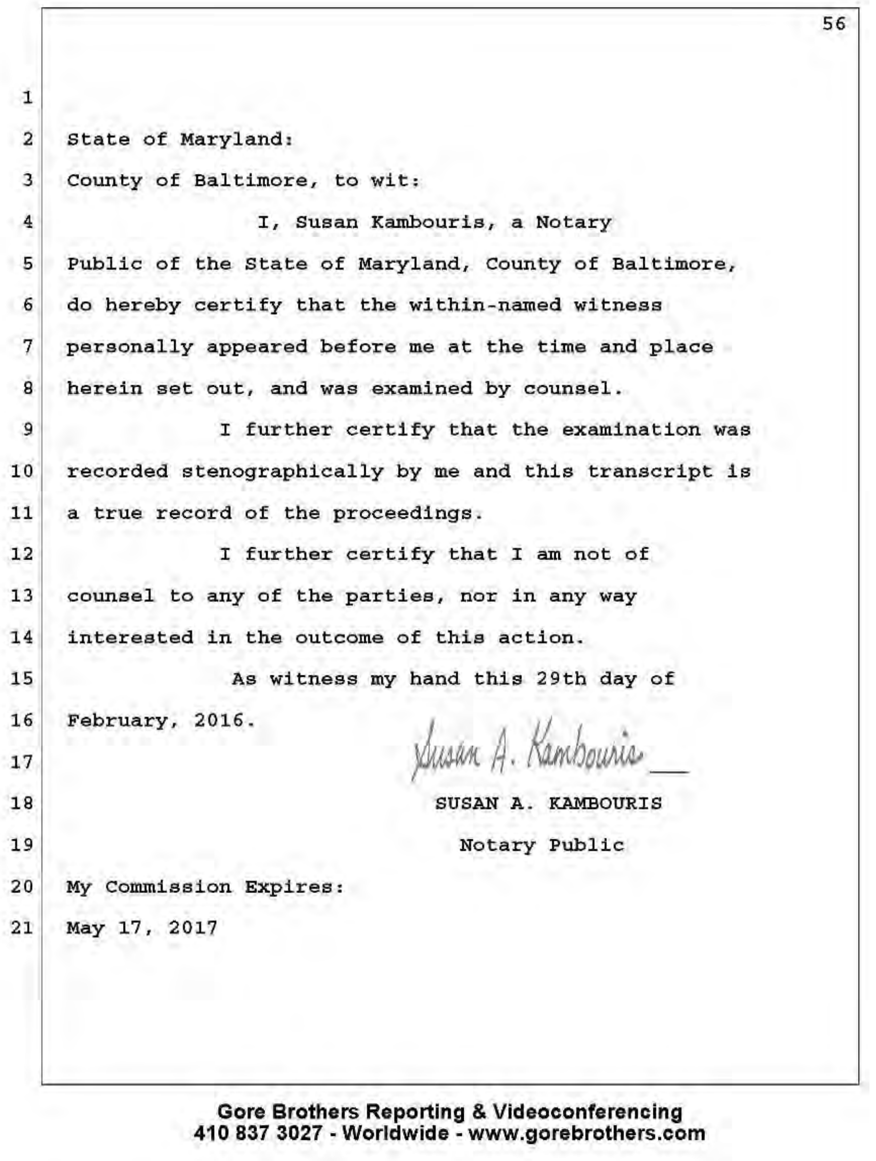
(Hearing concluded at 8:00 p.m.)

RESPONSES

and vibration impacts, and community health (among others) as described in **Chapter VI**. The Project Team has met with community members on two occasions: May 10 and May 31, 2016, to discuss project mitigation as described in **Chapter VII**. These efforts are ongoing and are documented in this FEIS. Additional details of this outreach are described in **Chapter VI** as well as **Chapter VIII.**

COMMENTS

RESPONSES



State of Maryland:

County of Baltimore, to wit:

I, Susan Kambouris, a Notary Public of the State of Maryland, County of Baltimore, do hereby certify that the within-named witness personally appeared before me at the time and place herein set out, and was examined by counsel.

I further certify that the examination was recorded stenographically by me and this transcript is a true record of the proceedings.

I further certify that I am not of counsel to any of the parties, nor in any way interested in the outcome of this action.

As witness my hand this 29th day of February, 2016.

Susan A. Kambouris

SUSAN A. KAMBOURIS

Notary Public

My Commission Expires:
May 17, 2017

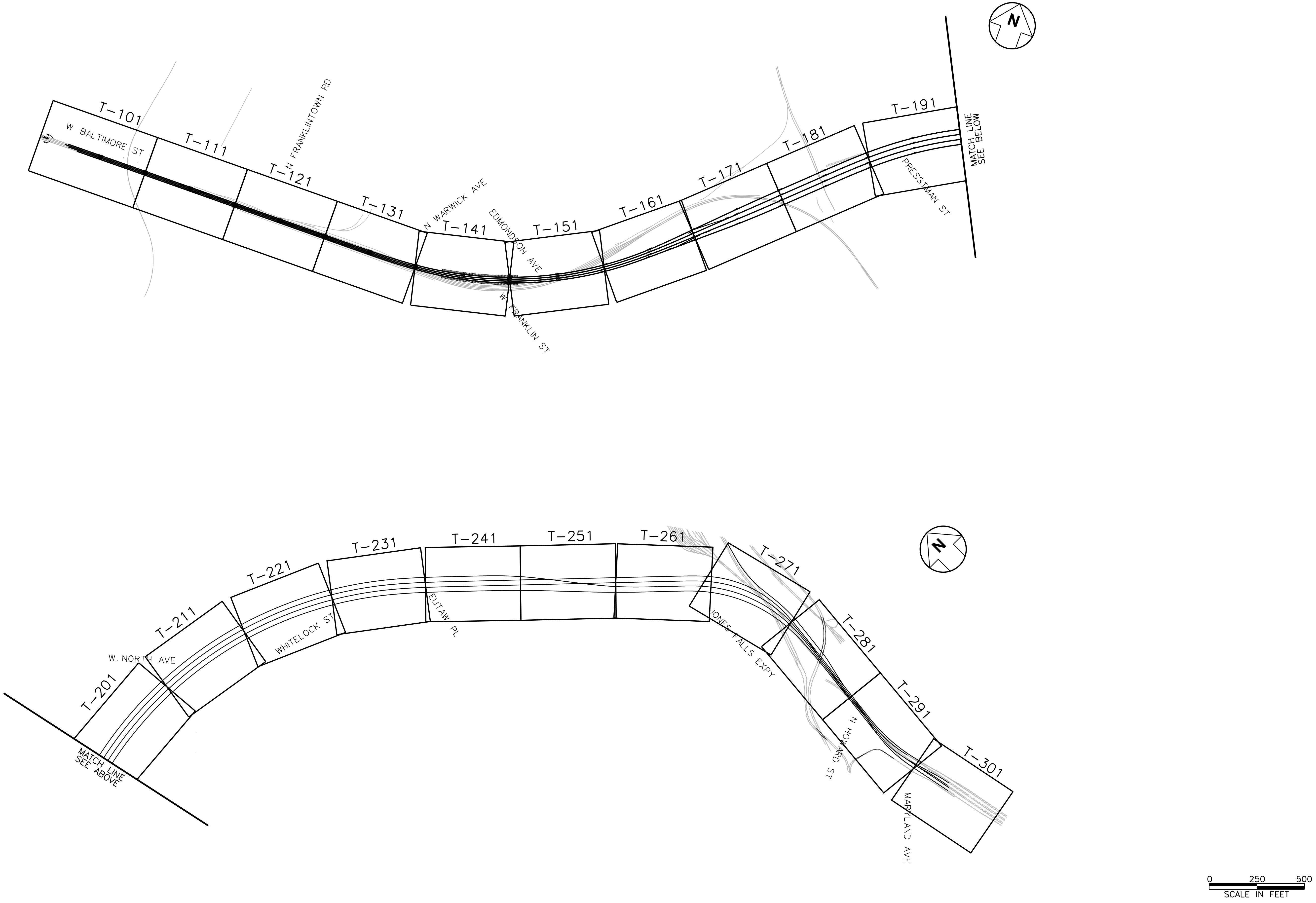
Appendix J

B&P TUNNEL PROJECT

Plan and Profile Drawings

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department
of Transportation



$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

AMTRAK®

Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved Date

WORK IN PROGRESS

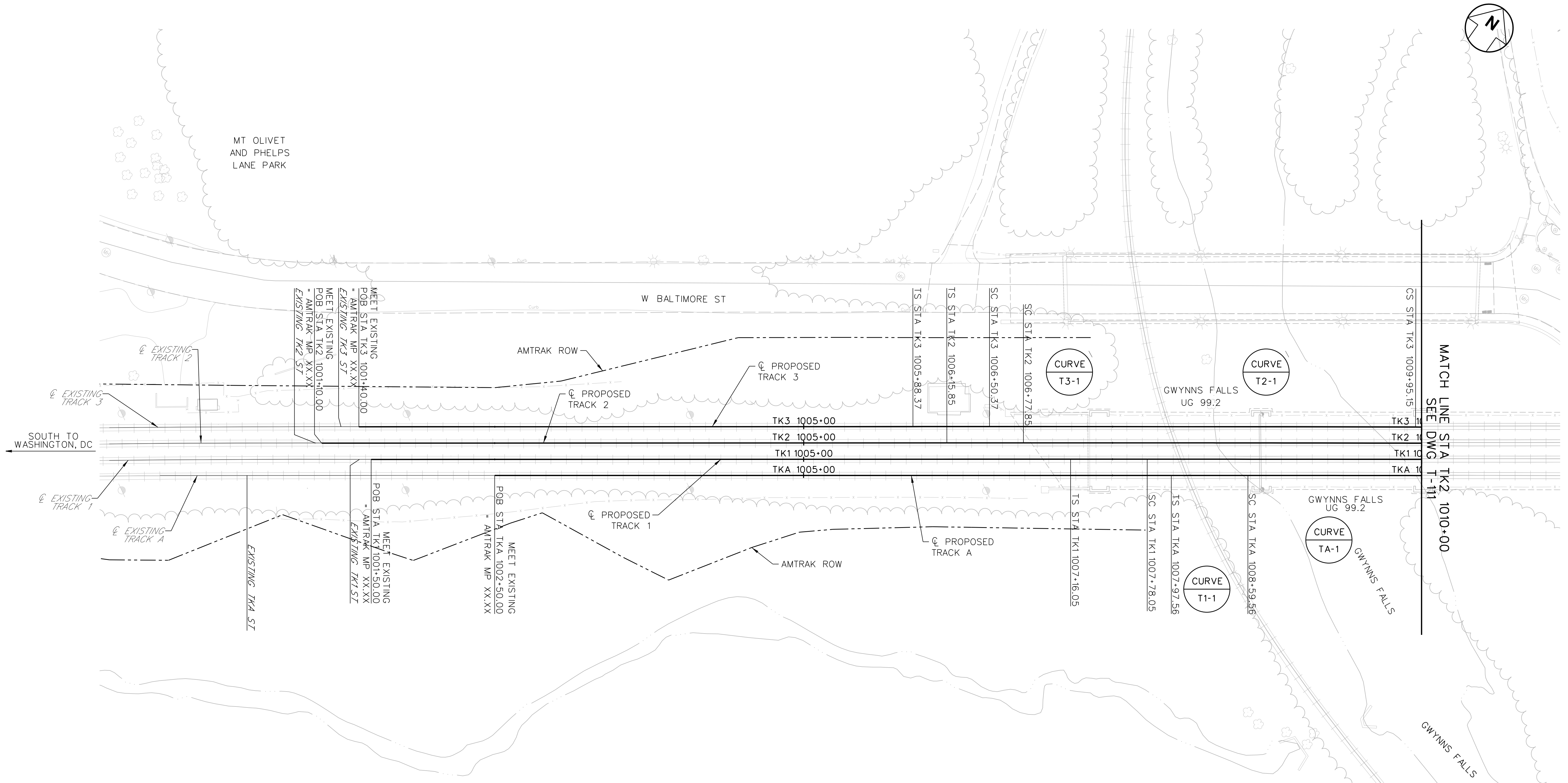
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

KEY MAP

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-051



CURVE TA-1 – TRACK A

D_C = 0°-02'-15.00"	Δ_I = 00°-09'-00.25"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_S = 00°-00'-41.85"	
R = 152788.75'	Δ_C = 00°-07'-36.55"	
L_C = 338.19'	θ_S = 00°-00'-41.85"	
T_S = 231.09'/231.09'	E = 0.09'	
E_a = 0.25"	M = 0.09'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-0.18"	0.07"
V_{MPH} =	50	110
JERK RATE ENT =	-6.73	8.34
JERK RATE EXT =	-6.73	8.34

CURVE T1-1 – TRACK 1

D_C = 0°-02'-30.00"	Δ_I = 00°-10'-07.78"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_S = 00°-00'-46.50"	
R = 137509.87'	Δ_C = 00°-08'-34.78"	
L_C = 343.19'	θ_S = 00°-00'-46.50"	
T_S = 233.59'/233.59'	E = 0.11'	
E_a = 0.25"	M = 0.11'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-0.18"	0.10"
V_{MPH} =	50	110
JERK RATE ENT =	-7.00	5.48
JERK RATE EXT =	-7.00	5.48

CURVE T2-1 – TRACK 2

D_C = 0°-02'-30.00"	Δ_I = 00°-10'-41.36"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_S = 00°-00'-46.50"	
R = 137509.87'	Δ_C = 00°-09'-08.36"	
L_C = 365.57'	θ_S = 00°-00'-46.50"	
T_S = 244.79'/244.79'	E = 0.12'	
E_a = 0.25"	M = 0.12'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-0.18"	0.10"
V_{MPH} =	50	110
JERK RATE ENT =	-7.00	5.48
JERK RATE EXT =	-7.00	5.48

CURVE T3-1 – TRACK 3

D_C = 0°-02'-30.00"	Δ_I = 00°-10'-10.17"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_S = 00°-00'-46.50"	
R = 137509.87'	Δ_C = 00°-08'-37.17"	
L_C = 344.78'	θ_S = 00°-00'-46.50"	
T_S = 234.39'/234.39'	E = 0.11'	
E_a = 0.25"	M = 0.11'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-0.18"	0.10"
V_{MPH} =	50	110
JERK RATE ENT =	-7.00	5.48
JERK RATE EXT =	-7.00	5.48

0 40 80
SCALE IN FEET

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Date
WORK IN PROGRESS

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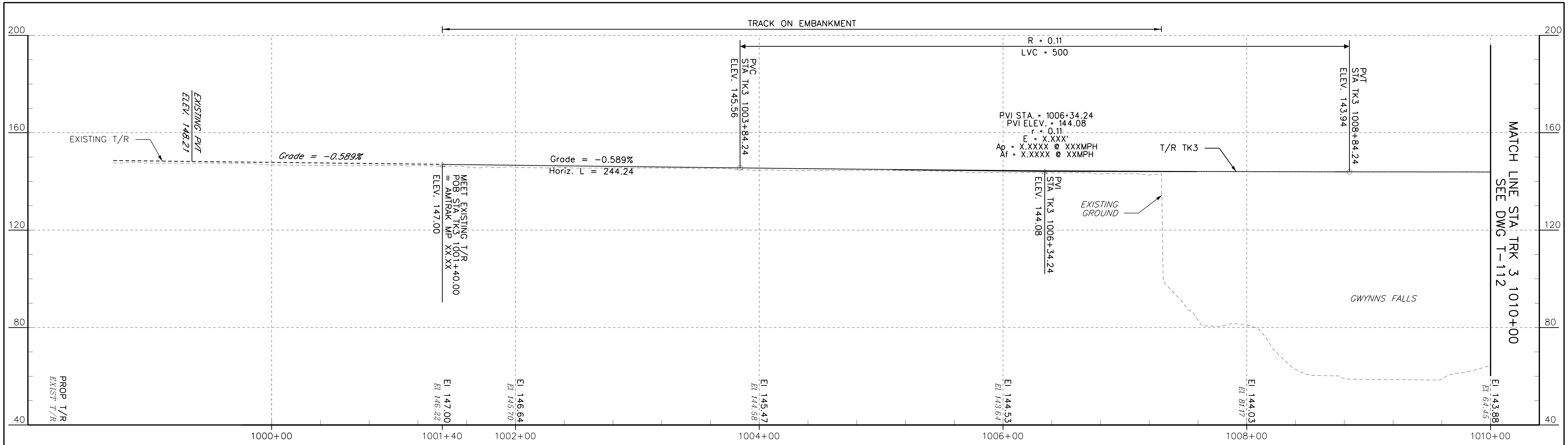
BALTIMORE, MD MPXX
B&P TUNNEL
TRACK PLAN
STA TK2 1001+10 TO STA TK2 1010+00

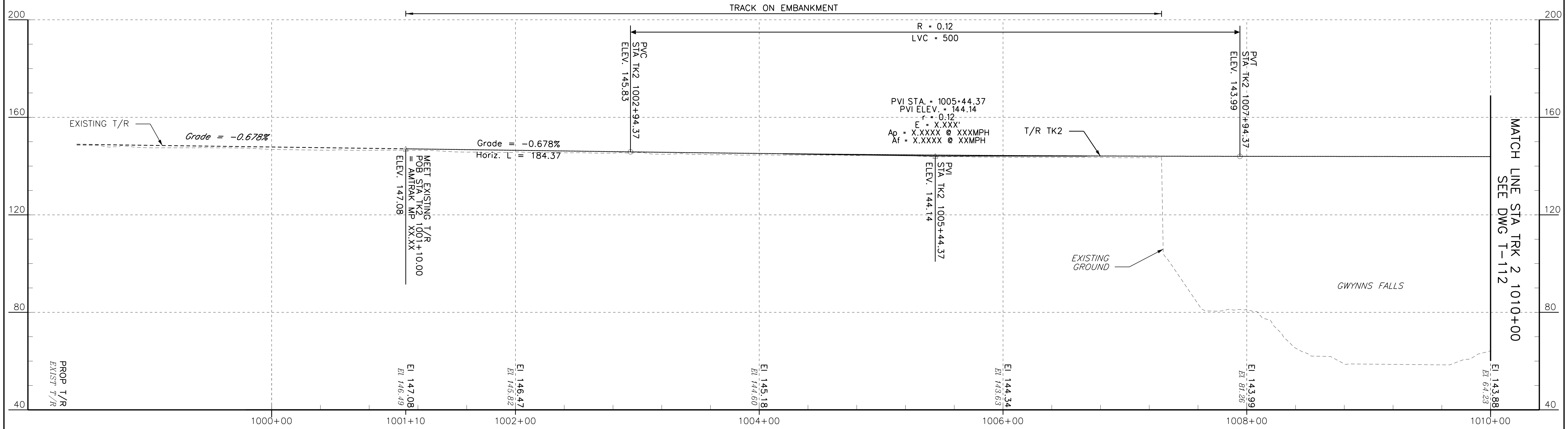
Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-101

$DATE$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO
$TIME$



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

No.	Revisions	Date	By

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B&P TUNNEL

PROFILES – TRACK 2 & TRACK 3
STA. 1000+00 TO STA. 1010+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No:	C.EN.201278
File name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-102

$DATE$ $TIME$
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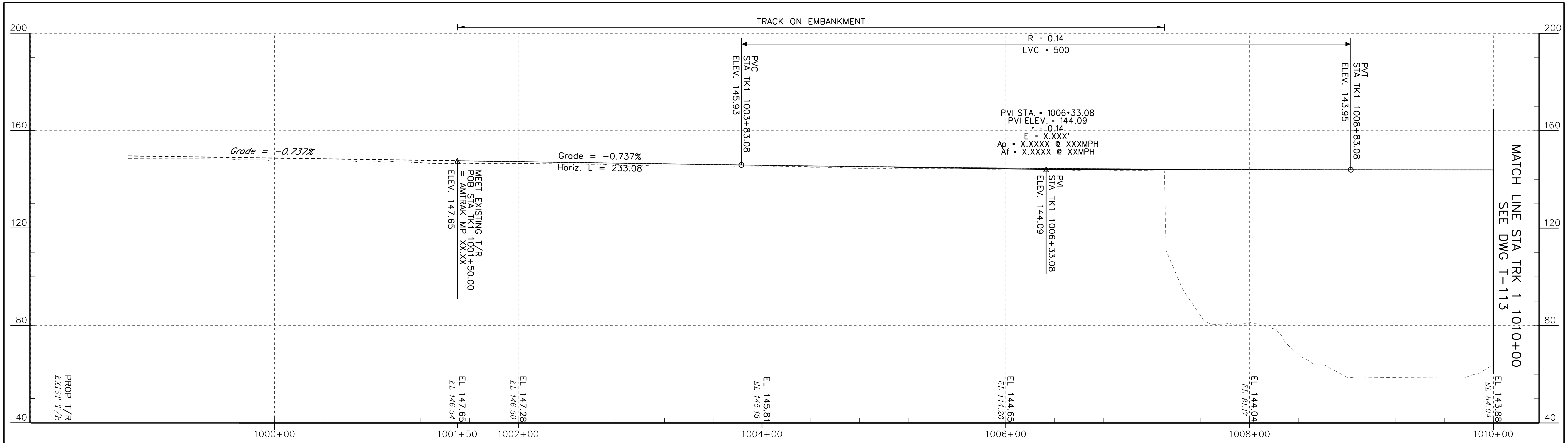
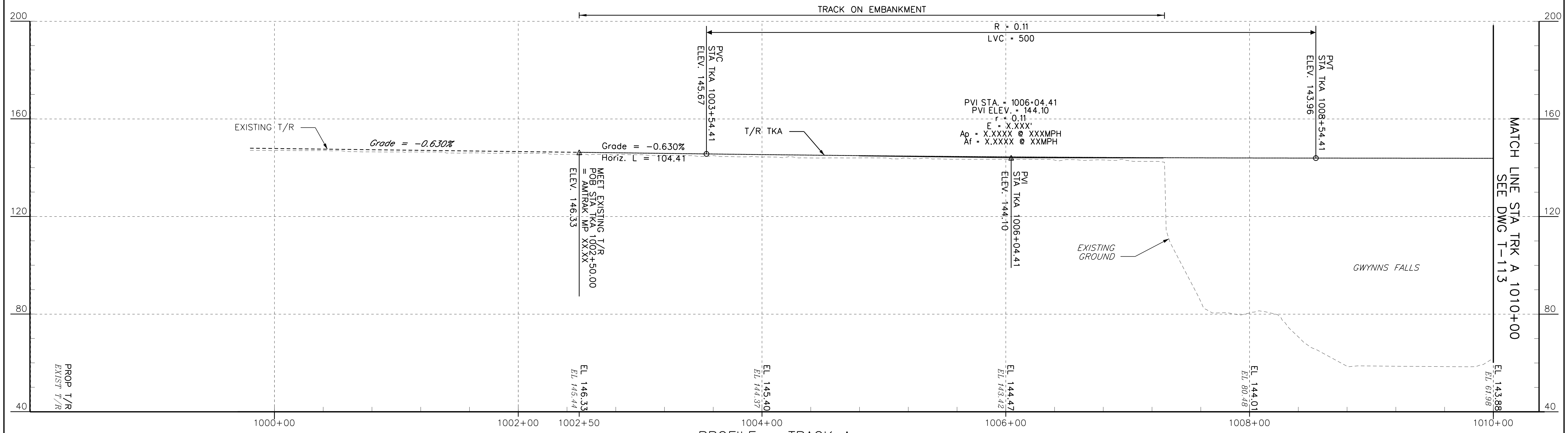
STANDARD PEN TABLE: NO



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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WORK IN PROGRESS

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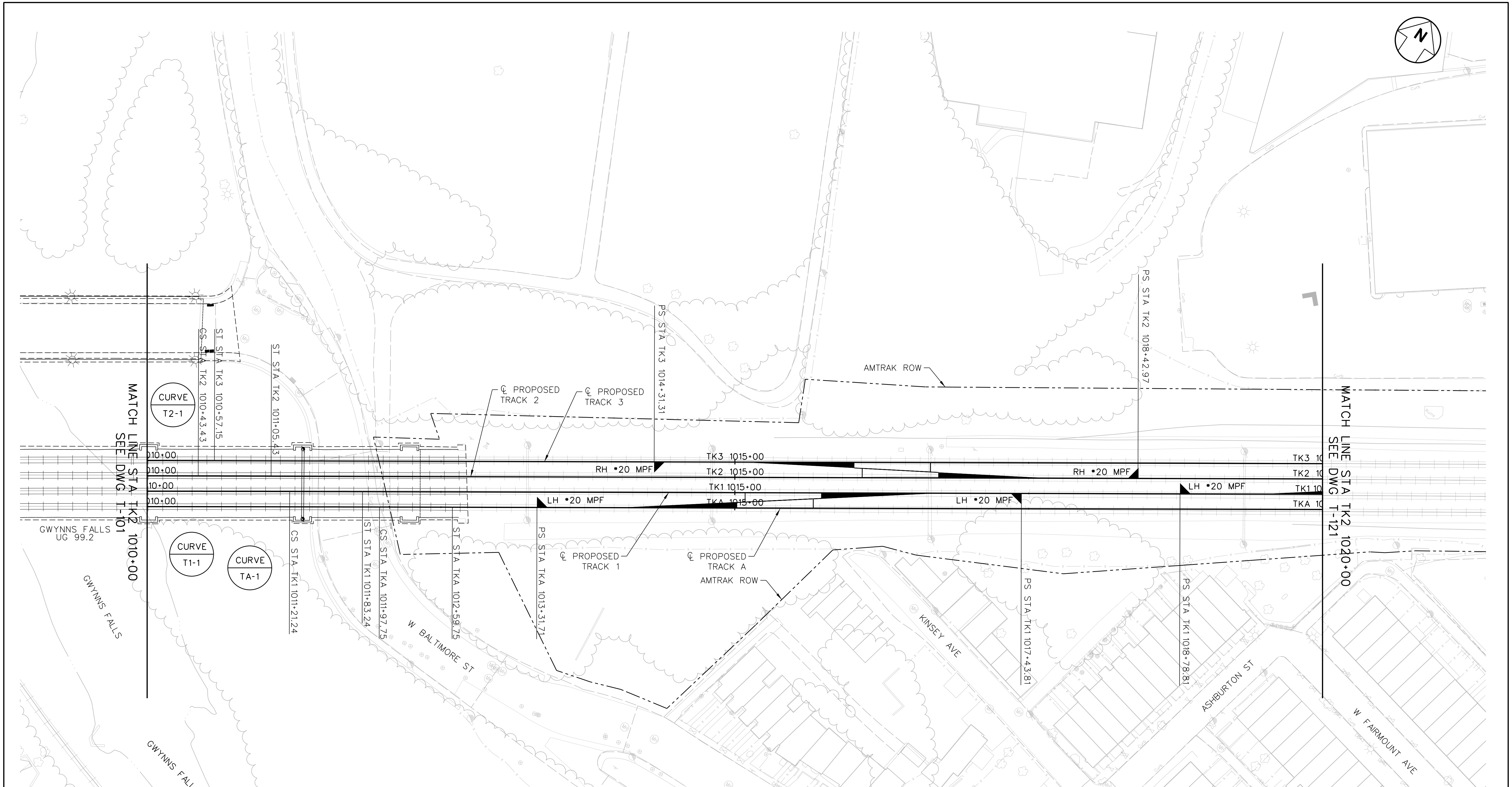
B&P TUNNEL

PROFILES – TRACK A & TRACK 1
STA. 1000+00 TO STA. 1010+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–103



CURVE TA-1 – TRACK A

D_C = 0°-02'-15.00"	Δ_I = 00°-09'-00.25"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_s = 00°-00'-41.85"	
R = 152788.75'	Δ_C = 00°-07'-36.55"	
L_C = 338.19'	θ_s = 00°-00'-41.85"	
T_S = 231.09'/231.09'	E = 0.09'	
E_a = 0.25"	M = 0.09'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-0.18"	0.07"
V_{MPH} =	50	110
JERK RATE ENT =	-6.73	8.34
JERK RATE EXT =	-6.73	8.34

CURVE T1-1 – TRACK 1

D_C = 0°-02'-30.00"	Δ_I = 00°-10'-07.78"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_s = 00°-00'-46.50"	
R = 137509.87'	Δ_C = 00°-08'-34.78"	
L_C = 343.19'	θ_s = 00°-00'-46.50"	
T_S = 233.59'/233.59'	E = 0.11'	
E_a = 0.25"	M = 0.11'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-0.18"	0.10"
V_{MPH} =	50	110
JERK RATE ENT =	-7.00	5.48
JERK RATE EXT =	-7.00	5.48

CURVE T2-1 – TRACK 2

D_C = 0°-02'-30.00"	Δ_I = 00°-10'-41.36"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_s = 00°-00'-46.50"	
R = 137509.87'	Δ_C = 00°-09'-08.36"	
L_C = 365.57'	θ_s = 00°-00'-46.50"	
T_S = 244.79'/244.79'	E = 0.12'	
E_a = 0.25"	M = 0.12'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-0.18"	0.10"
V_{MPH} =	50	110
JERK RATE ENT =	-7.00	5.48
JERK RATE EXT =	-7.00	5.48

0 40 80
SCALE IN FEET

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30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS	

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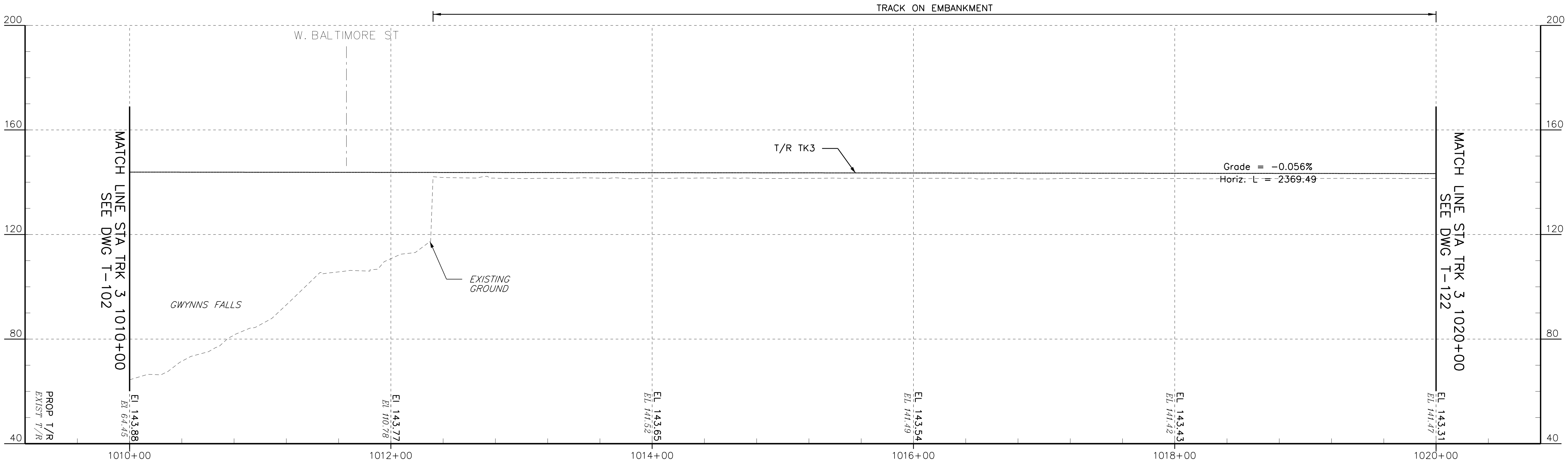
BALTIMORE, MD MPXX
B&P TUNNEL

TRACK PLAN
STA TK2 1010+00 TO STA TK2 1020+00

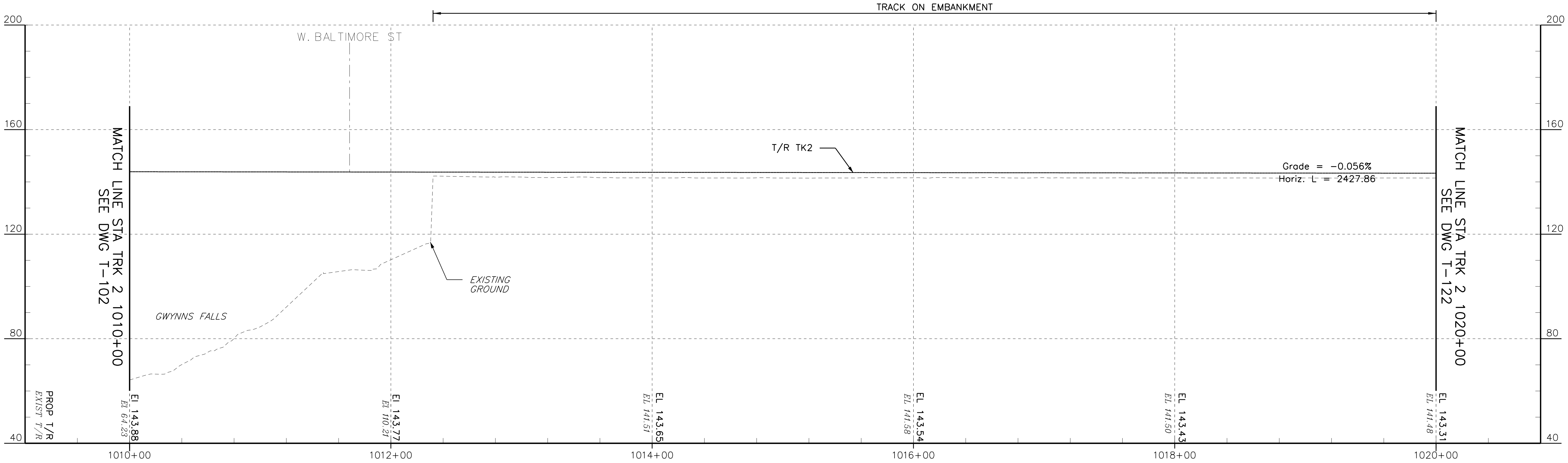
Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-111

$DATE$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO
$TIME$



PROFILE – TRACK 3



PROFILE – TRACK 2

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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WORK IN PROGRESS	

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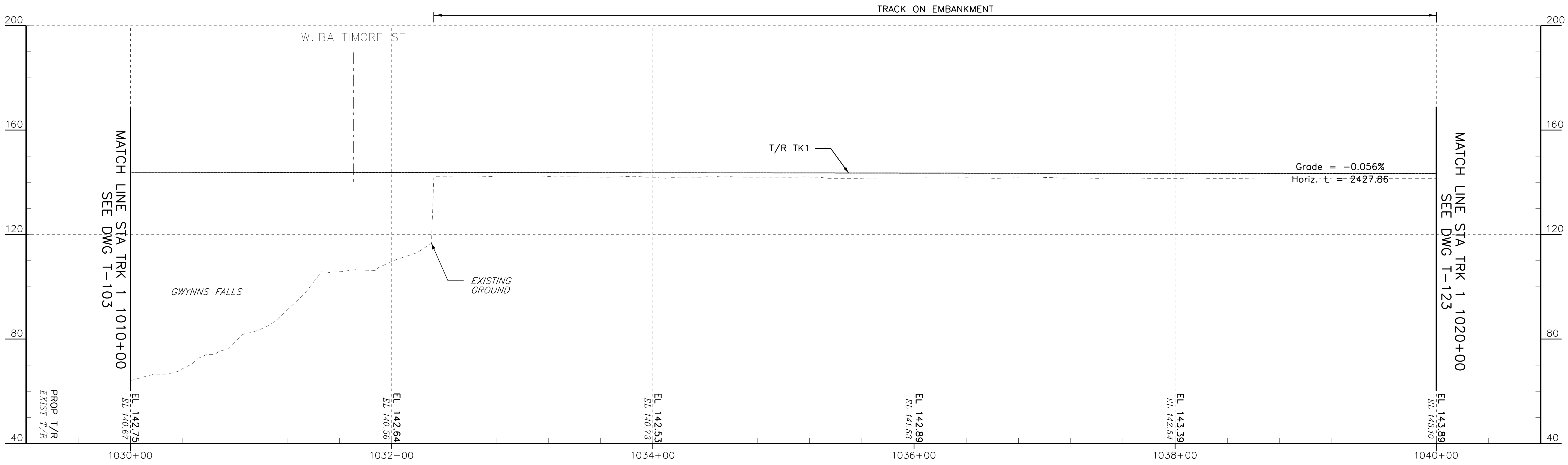
BALTIMORE, MD MPXX
B&P TUNNEL

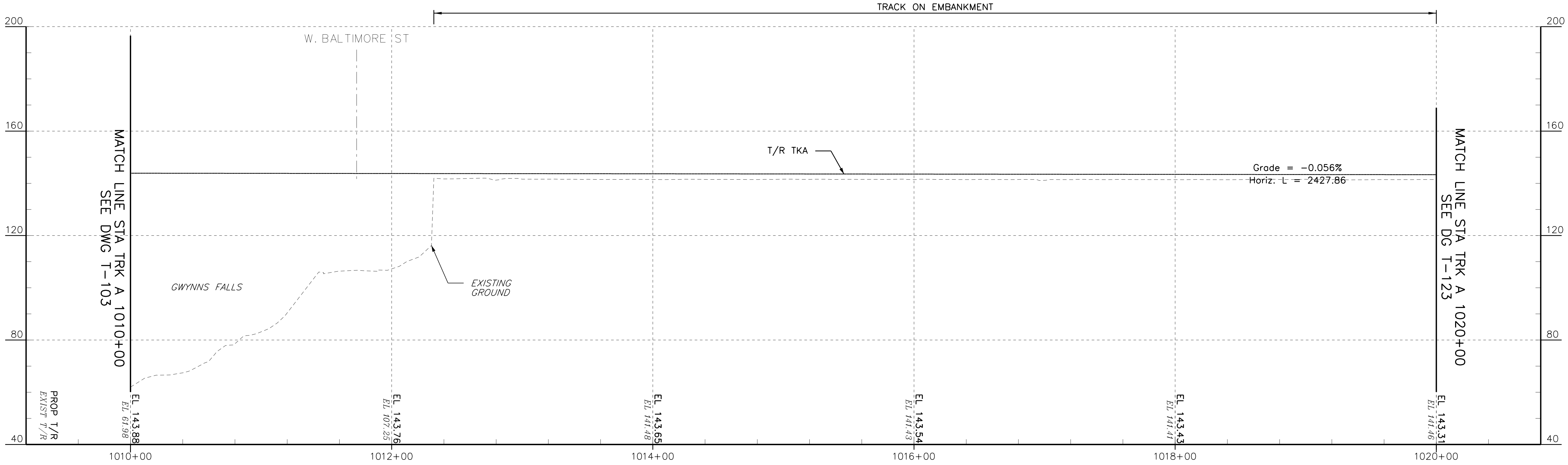
PROFILES – TRACK 2 & TRACK 3
STA. 1010+00 TO STA. 1020+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–112



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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PROFILES – TRACK A & TRACK 1
STA. 1010+00 TO STA. 1020+00

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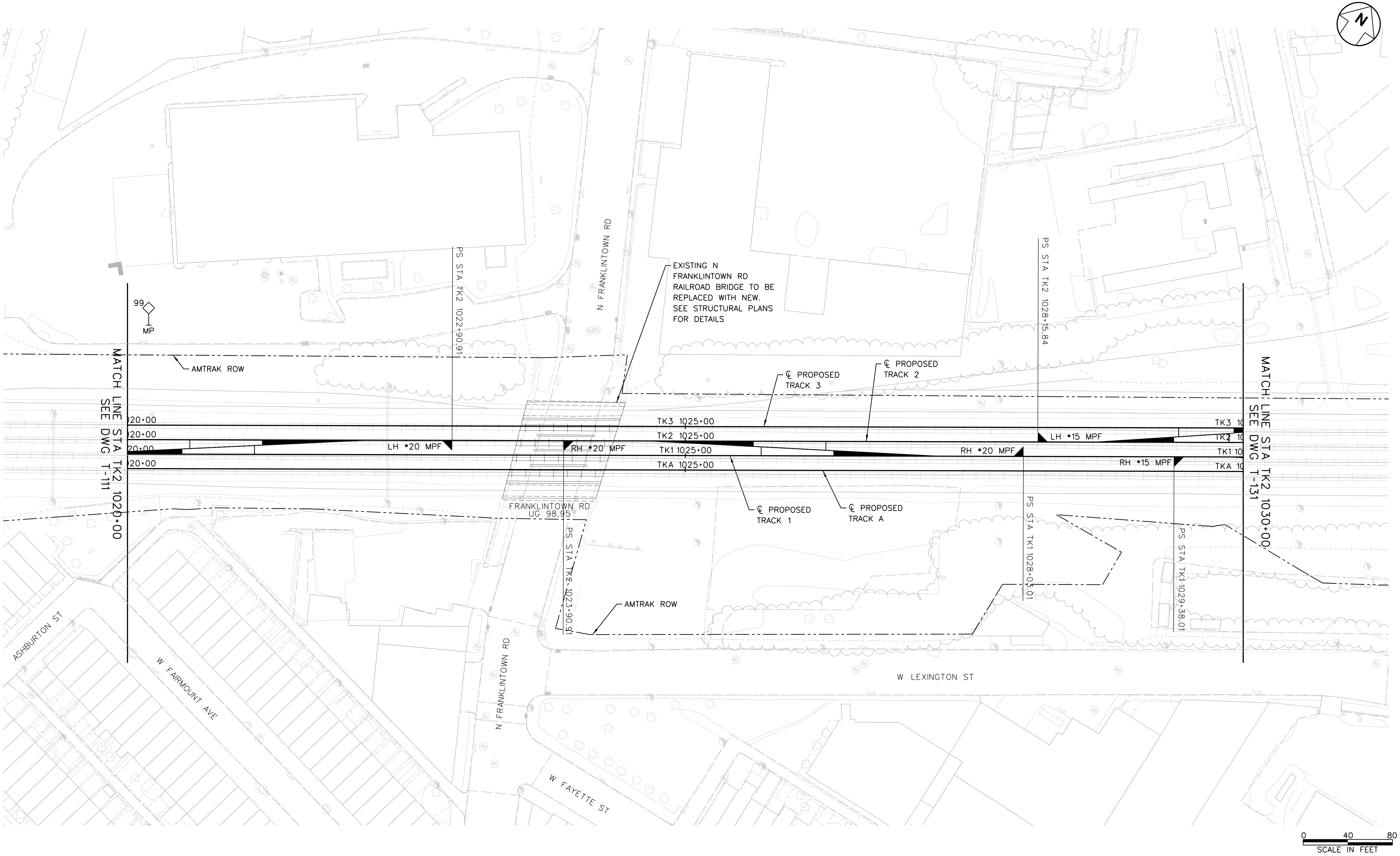
Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-113



$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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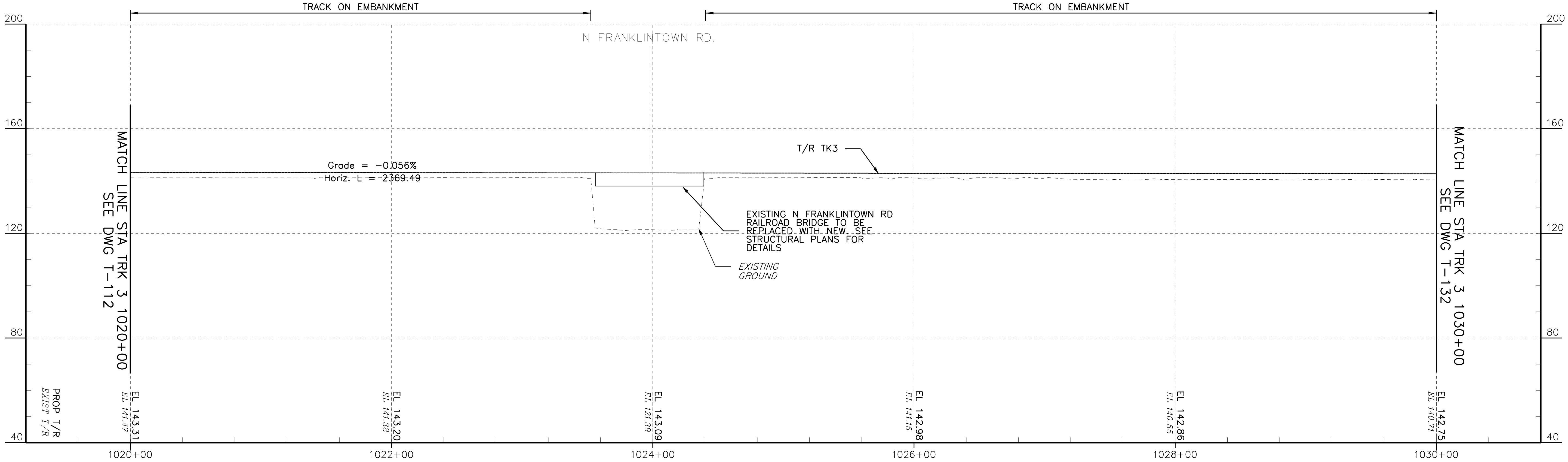
TRACK PLAN
STA TK2 1020+00 TO STA TK2 1030+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–121



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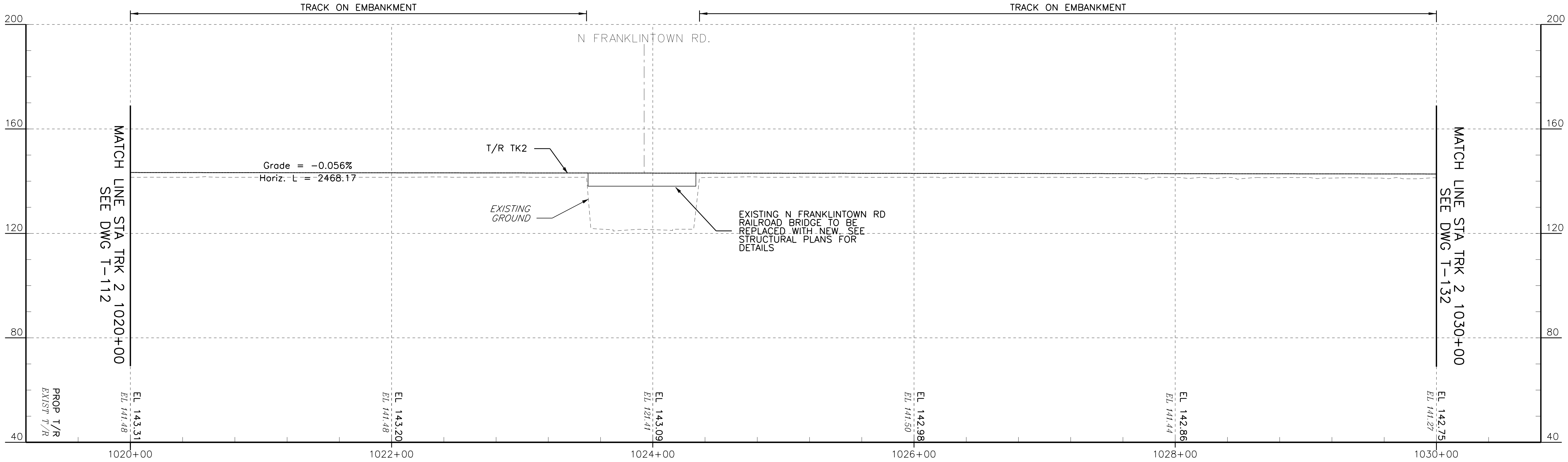

PROFILE – TRACK 2

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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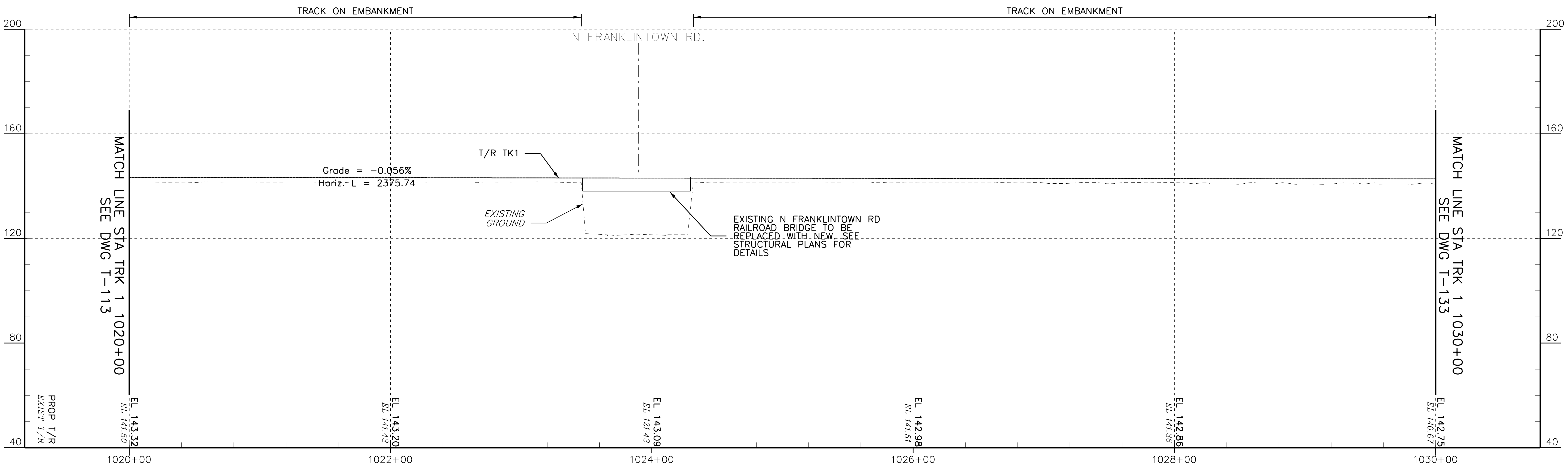
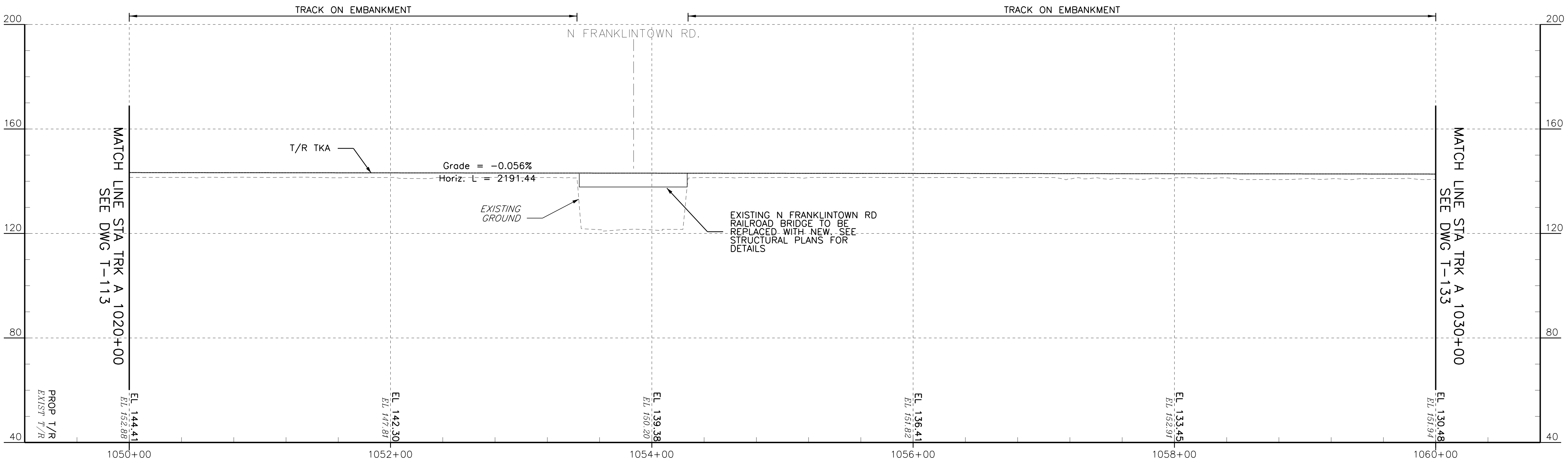
PROFILES – TRACK 2 & TRACK 3
STA. 1020+00 TO STA. 1030+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-122



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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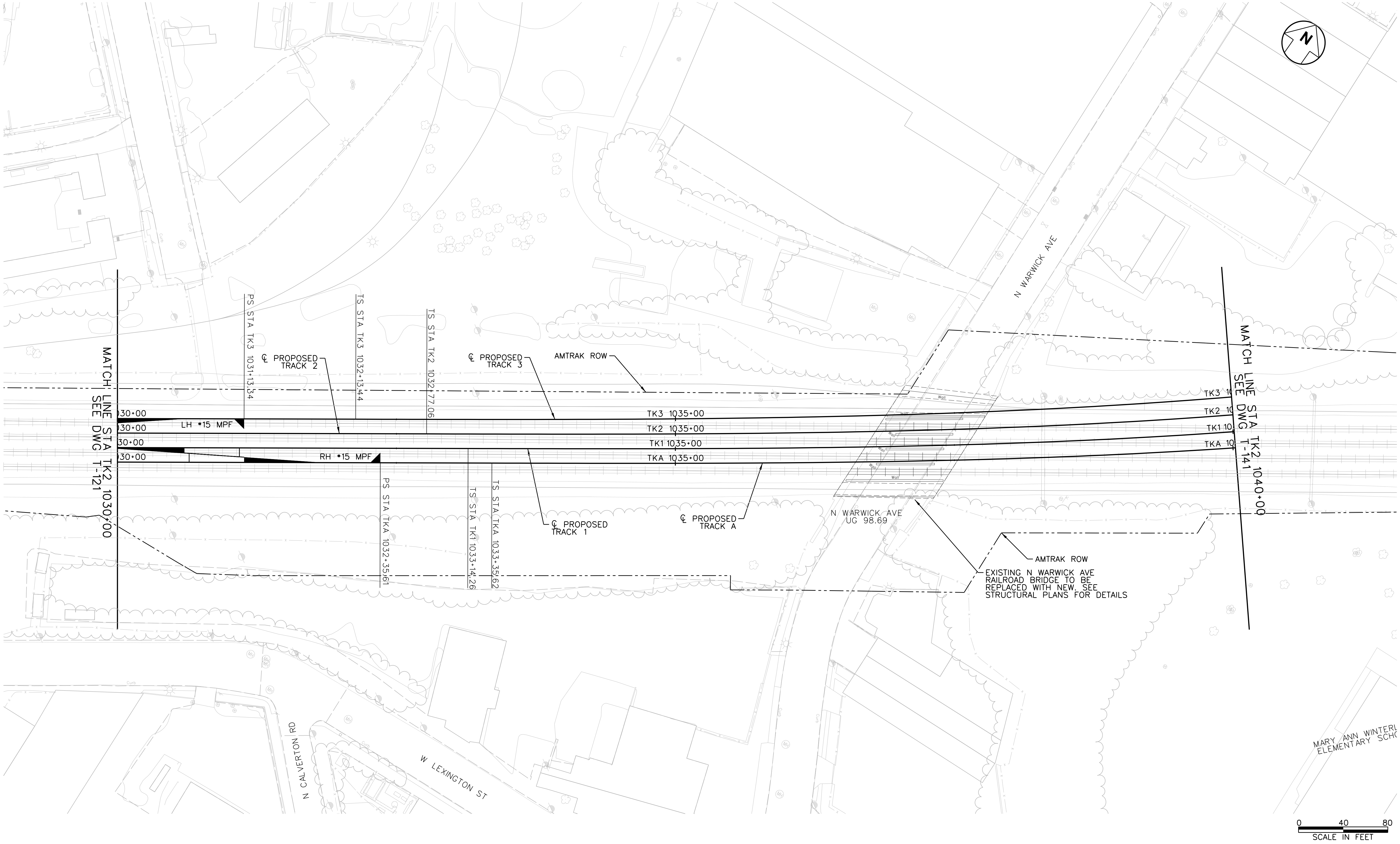
BALTIMORE, MD MPXX
B&P TUNNEL

PROFILES – TRACK A & TRACK 1
STA. 1020+00 TO STA. 1030+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-123



$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

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30th Street Station, Philadelphia, Pennsylvania 19104

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Date

WORK IN PROGRESS

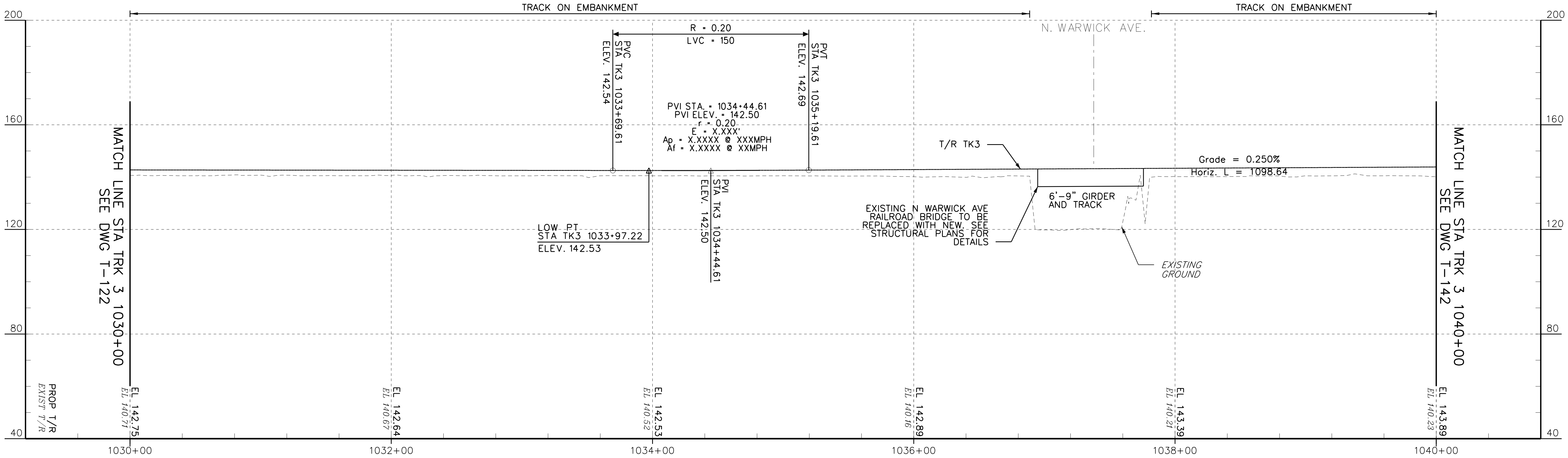
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD
B&P TUNNEL
MPXX

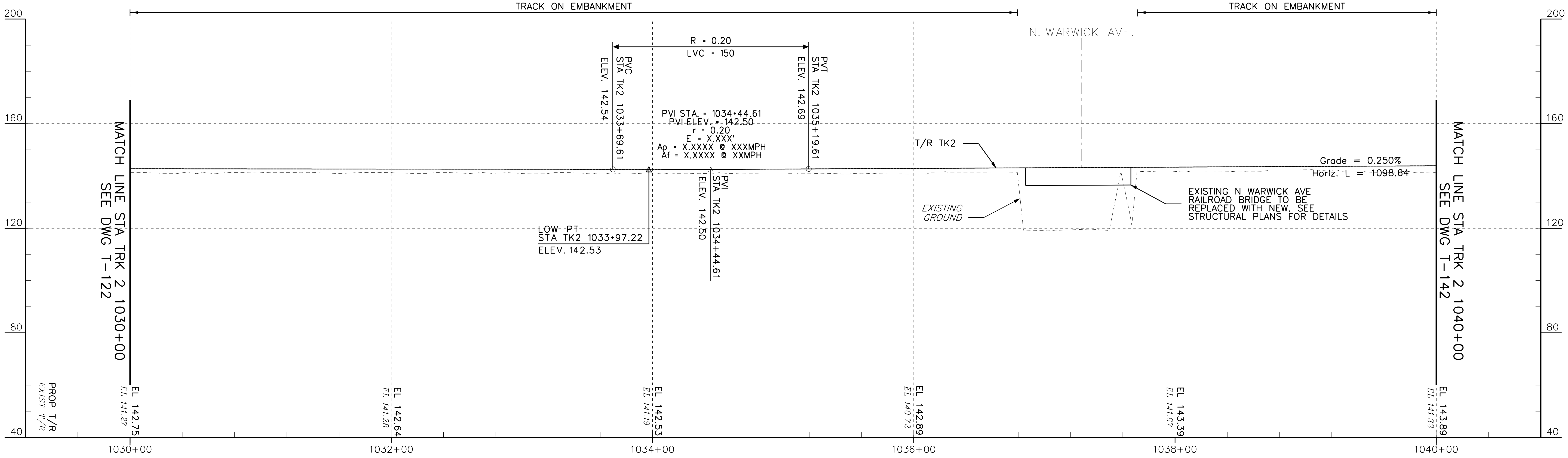
TRACK PLAN
STA TK2 1030+00 TO STA TK2 1040+00

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-131

Designed DO
Drawn JB
Checked FB
Date 09/28/2016



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

No.	Revisions	Date	By

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

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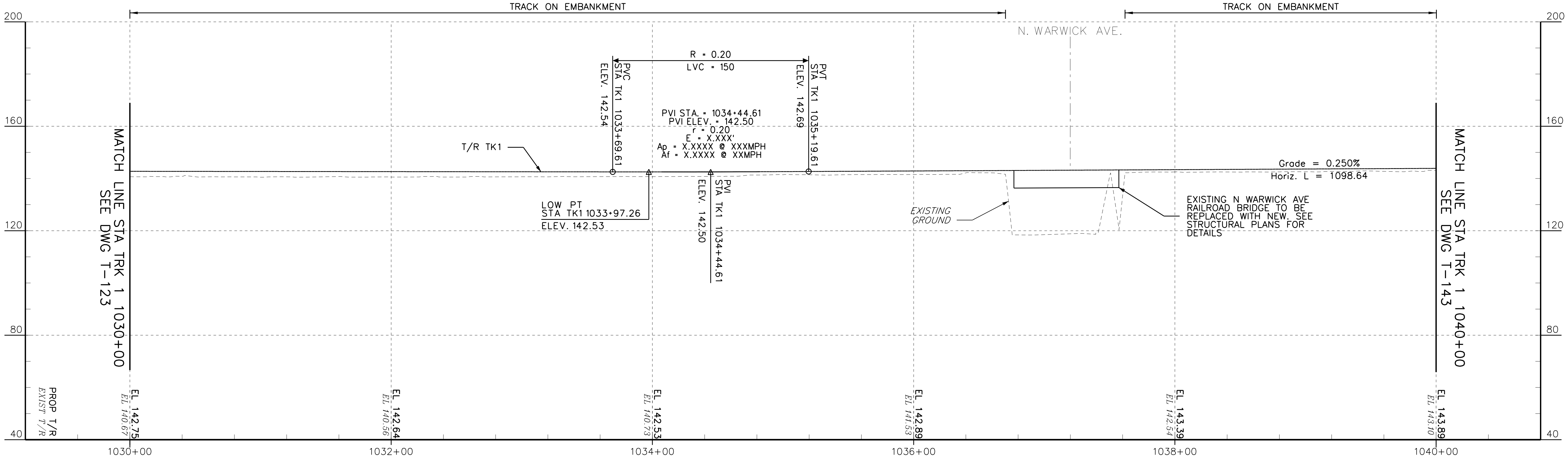
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

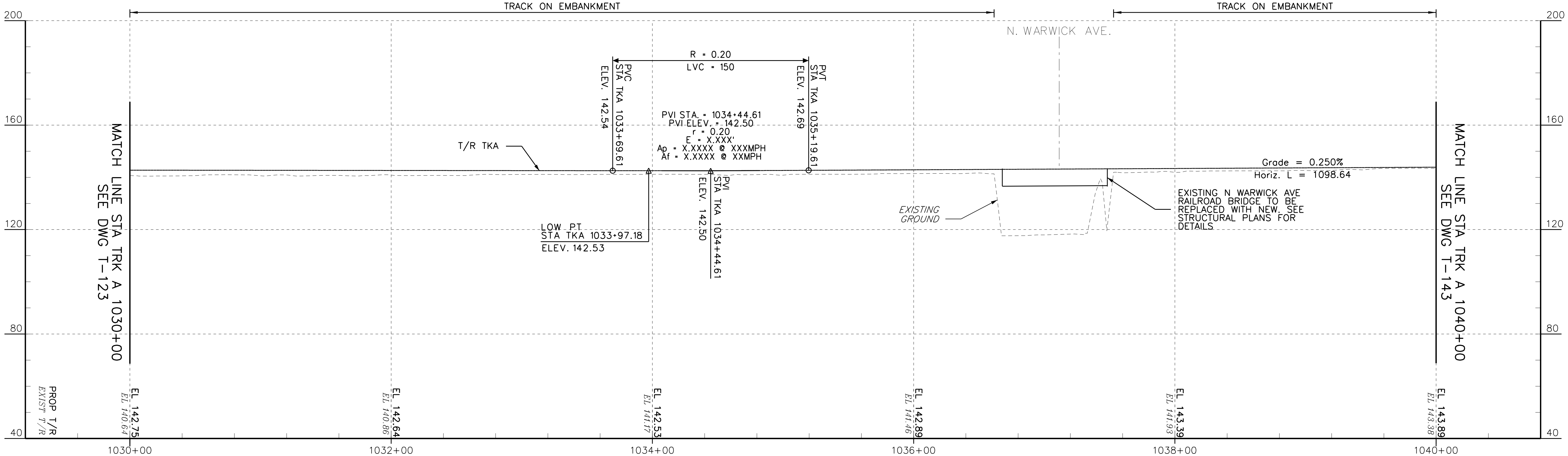
PROFILES – TRACK 2 & TRACK 3
STA. 1030+00 TO STA. 1040+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–132



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

No.	Revisions	Date	By

$DATE$ PLOT SCALE: AS SHOWN $TIME$
STANDARD PEN TABLE: NO

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS

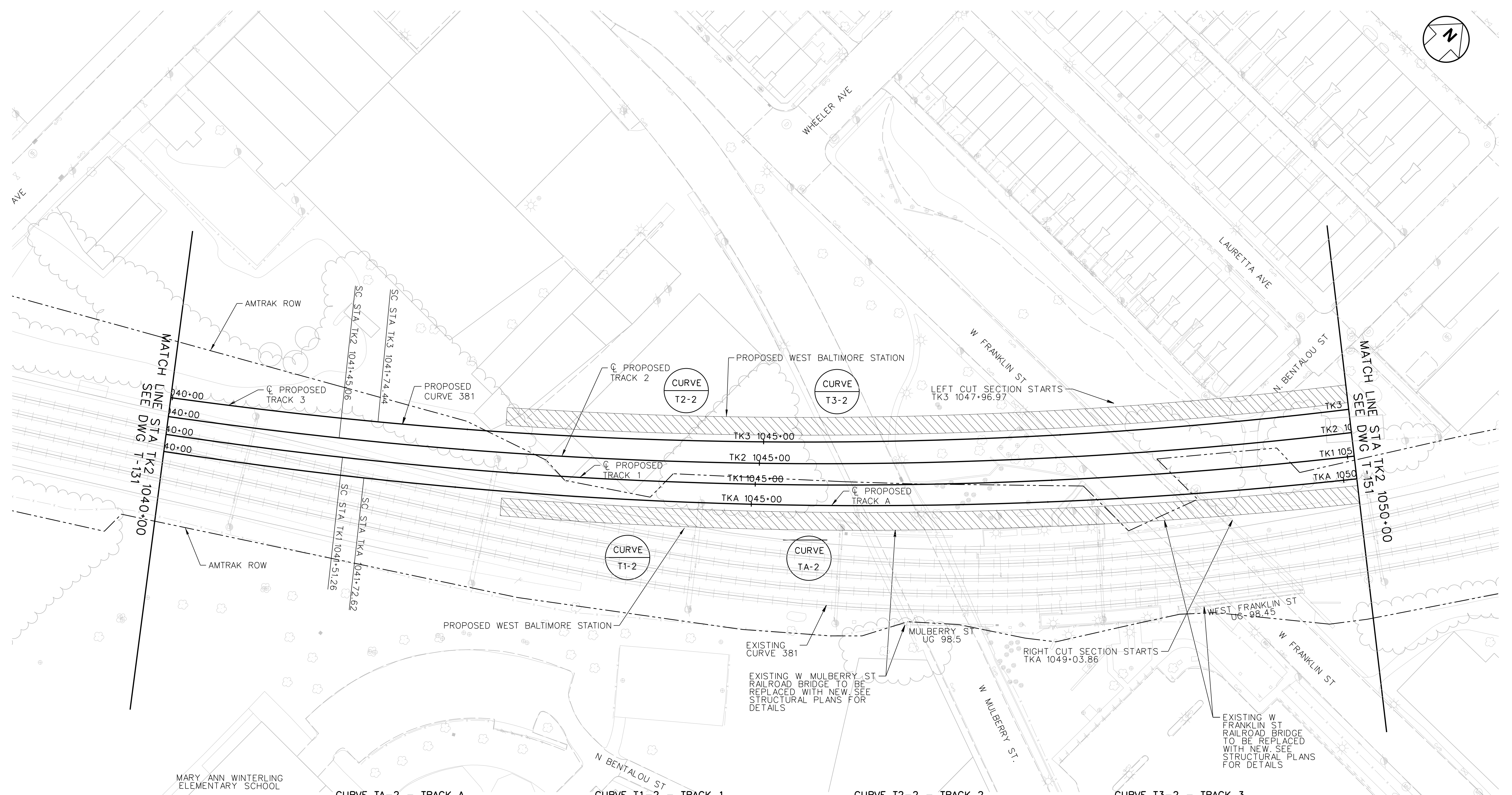
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILES – TRACK A & TRACK 1
STA. 1030+00 TO STA. 1040+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No:	C.EN.201278
File name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–133


AVE
WHEELER AVE
LAURETTA AVE
N BENTALOU ST
W FRANKLIN ST
MATCH LINE STA TK2 1040+00 SEE DWG T-131
MATCH LINE STA TK2 1050+00 SEE DWG T-151
AMTRAK ROW
SC STA TK2 1041+45.06
SC STA TK3 1041+74.44
℄ PROPOSED TRACK 3
PROPOSED CURVE 381
℄ PROPOSED TRACK 2
CURVE T2-2
CURVE T3-2
PROPOSED WEST BALTIMORE STATION
LEFT CUT SECTION STARTS TK3 1047+96.97
1040+00
1040+00
1040+00
1040+00
TK3 1045+00
TK2 1045+00
TK1 1045+00
TKA 1045+00
TK3
TK2 10
TK1 105
TKA 1050
℄ PROPOSED TRACK 1
℄ PROPOSED TRACK A
SC STA TK1 1041+51.26
SC STA TKA 1041+72.62
CURVE T1-2
CURVE TA-2
AMTRAK ROW
PROPOSED WEST BALTIMORE STATION
EXISTING CURVE 381
MULBERRY ST UG 98.5
WEST FRANKLIN ST UG 98.45
RIGHT CUT SECTION STARTS TKA 1049+03.86
EXISTING W MULBERRY ST RAILROAD BRIDGE TO BE REPLACED WITH NEW. SEE STRUCTURAL PLANS FOR DETAILS
W MULBERRY ST.
W FRANKLIN ST
EXISTING W FRANKLIN ST RAILROAD BRIDGE TO BE REPLACED WITH NEW. SEE STRUCTURAL PLANS FOR DETAILS
N BENTALOU ST
MARY ANN WINTERLING ELEMENTARY SCHOOL
N
WOOD ST

CURVE TA-2 – TRACK A

D_C = 1°–30'–00.00"	Δ_I = 40°–01'–38.62"	
L_{sa}/L_{sb} = 837.00'/372.00'	θ_S = 06°–16'–38.35"	
R = 3819.83'	Δ_C = 30°–57'–36.56"	
L_C = 2064.07'	θ_S = 02°–47'–23.71"	
T_S = 1802.92'/1587.40'	E = 143.79'	
E_a = 1.00"	M = 138.57'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	1.13"	3.44"
V_{MPH} =	45	65
JERK RATE ENT =	16.52	3.75
JERK RATE EXT =	7.34	1.67

CURVE T1-2 – TRACK 1

D_C = 1°–30'–00.00"	Δ_I = 41°–45'–23.84"	
L_{sa}/L_{sb} = 837.00'/837.00'	θ_S = 06°–16'–38.35"	
R = 3819.83'	Δ_C = 29°–12'–07.13"	
L_C = 1946.85'	θ_S = 06°–16'–38.35"	
T_S = 1878.24'/1878.24'	E = 127.48'	
E_a = 5.50"	M = 123.36'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	–3.37"	5.00"
V_{MPH} =	45	100
JERK RATE ENT =	–5.51	1.67
JERK RATE EXT =	–5.51	1.67

CURVE T2-2 – TRACK 2

D_C = 1°–30'–00.00"	Δ_I = 43°–13'–25.12"	
L_{sa}/L_{sb} = 868.00'/837.00'	θ_S = 06°–30'–35.33"	
R = 3819.83'	Δ_C = 30°–26'–11.43"	
L_C = 2029.16'	θ_S = 06°–16'–38.35"	
T_S = 1949.52'/1935.49'	E = 138.82'	
E_a = 5.50"	M = 133.95'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	–2.88"	5.00"
V_{MPH} =	50	100
JERK RATE ENT =	–6.04	1.74
JERK RATE EXT =	–5.82	1.67

CURVE T3-2 – TRACK 3

D_C = 1°–30'–00.00"	Δ_I = 44°–32'–22.33"	
L_{sa}/L_{sb} = 961.00'/372.00'	θ_S = 07°–12'–26.26"	
R = 137509.87'	Δ_C = 34°–32'–32.26"	
L_C = 2302.89'	θ_S = 02°–47'–24.71"	
T_S = 2036.44'/1763.08'	E = 180.37'	
E_a = 1.00"	M = 172.23'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	1.13"	3.44"
V_{MPH} =	45	65
JERK RATE ENT =	18.97	4.30
JERK RATE EXT =	7.34	1.67

0 40 80
SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS

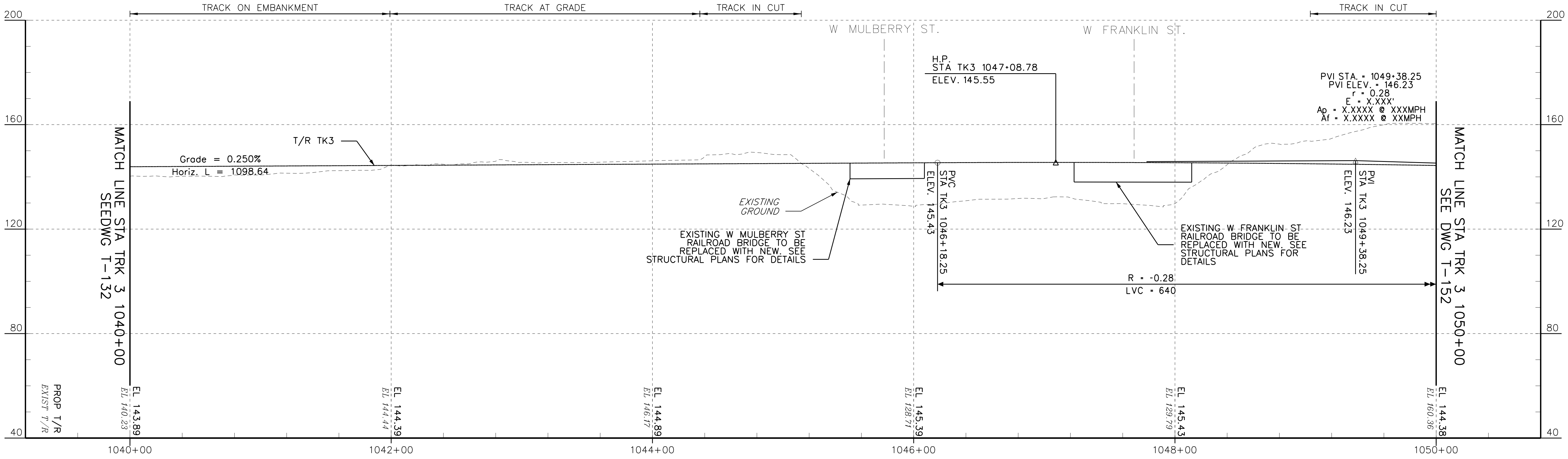
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD
B&P TUNNEL
MPXX

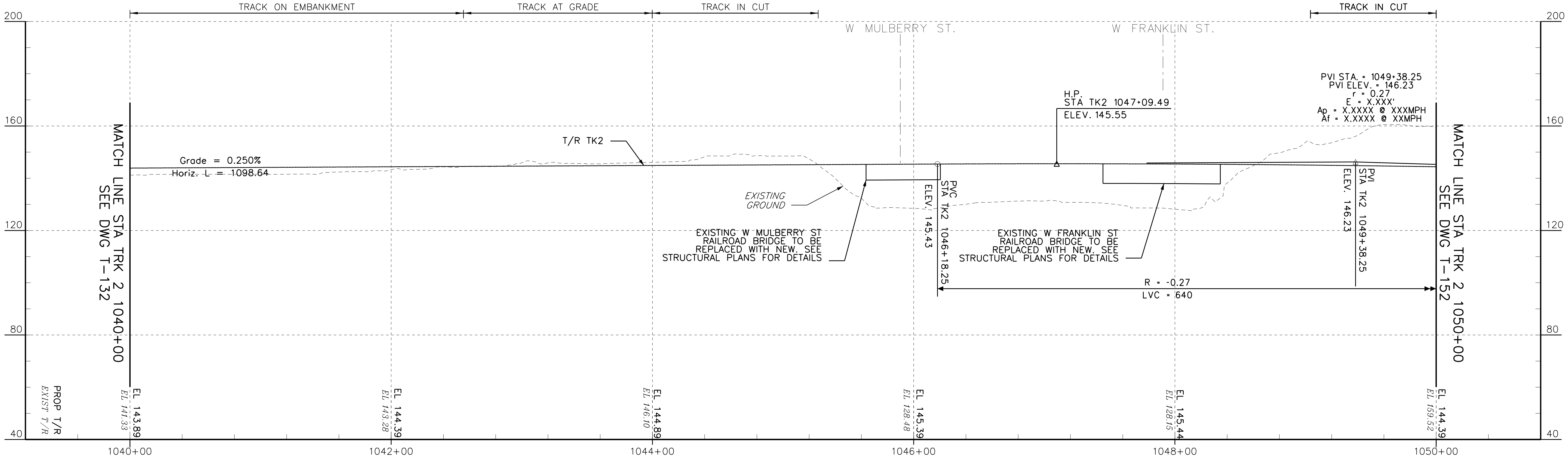
TRACK PLAN
STA TK2 1040+00 TO STA TK2 1050+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
File name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-141



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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A Parsons Brinckerhoff/Parsons Joint Venture

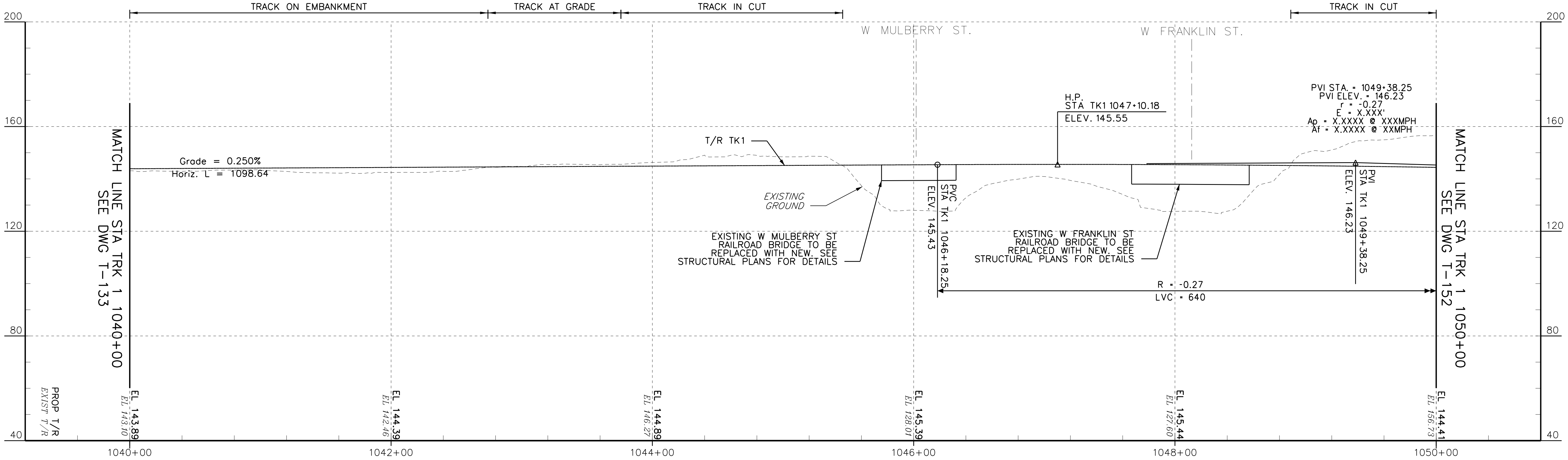
BALTIMORE, MD MPXX
B&P TUNNEL

PROFILES – TRACK 2 & TRACK 3
STA. 1040+00 TO STA. 1050+00

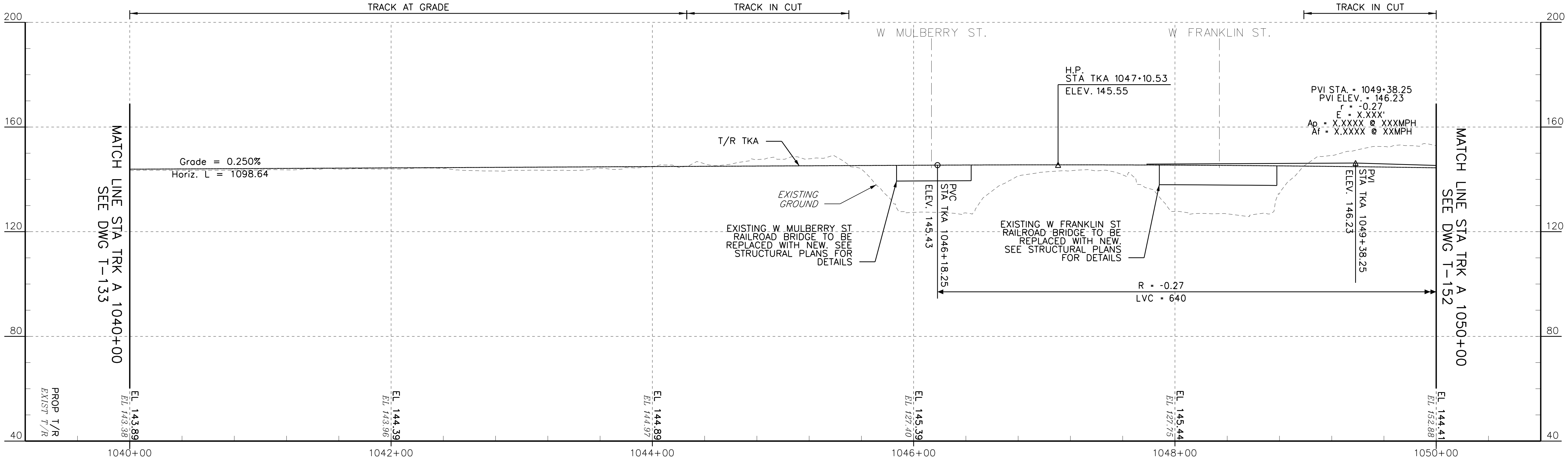
Designed DO Drawn JB Checked FB Date 09/28/2016

Project No:	C.EN.201278
File name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-142

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS

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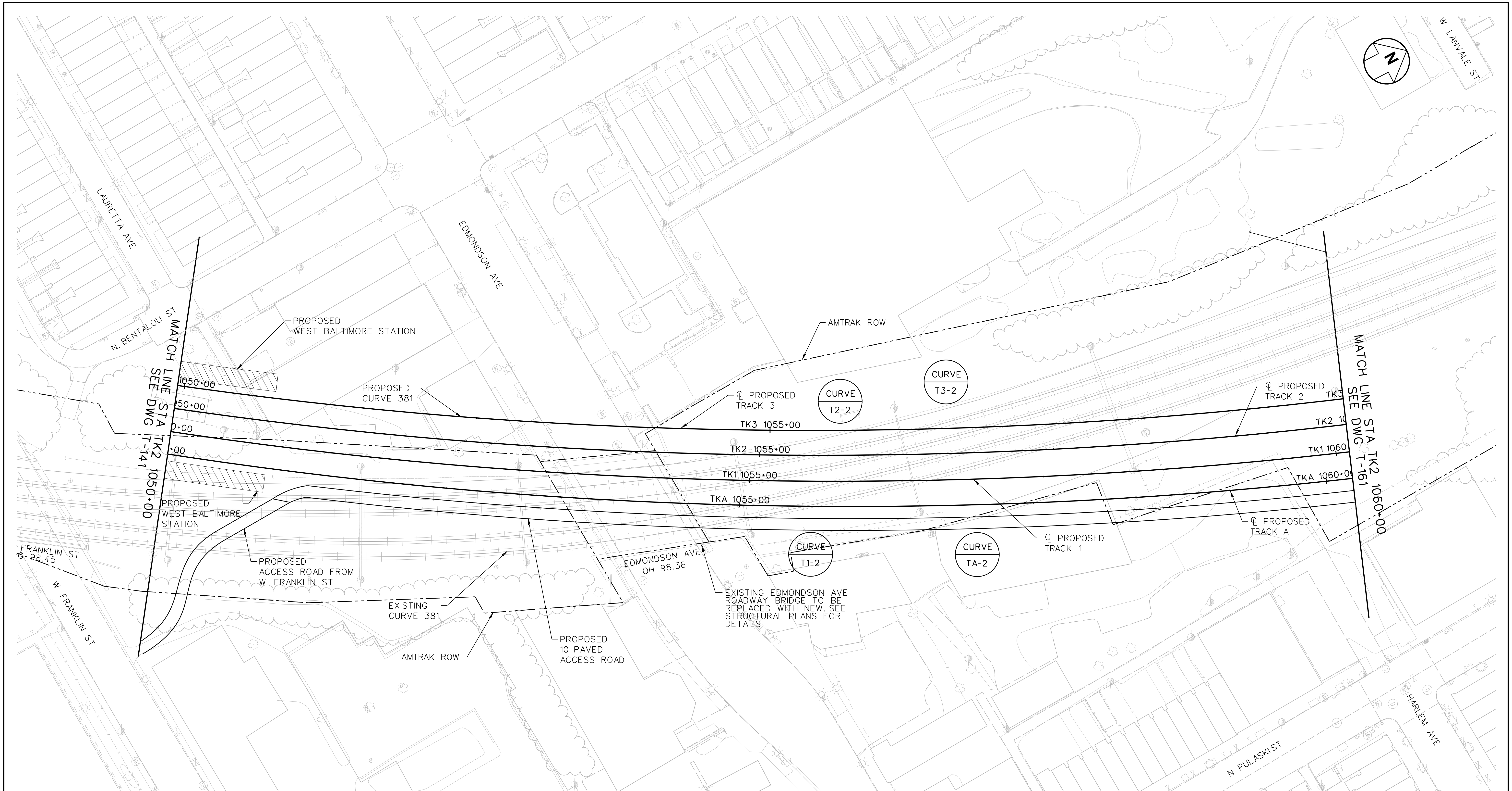
MPXX

PROFILES – TRACK A & TRACK 1
STA. 1040+00 TO STA. 1050+00

Designed	DO	Drawn	JB	Checked	FB	Date	09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-143



CURVE TA–2 – TRACK A

D_C = 1°–30'–00.00"	Δ_I = 40°–01'–38.62"	
L_{sa}/L_{sb} = 837.00'/372.00'	θ_S = 06°–16'–38.35"	
R = 3819.83'	Δ_C = 30°–57'–36.56"	
L_C = 2064.07'	θ_S = 02°–47'–23.71"	
T_S = 1802.92'/1587.40'	E = 143.79'	
E_a = 1.00"	M = 138.57'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	1.13"	3.44"
V_{MPH} =	45	65
JERK RATE ENT =	16.52	3.75
JERK RATE EXT =	7.34	1.67

CURVE T1–2 – TRACK 1

D_C = 1°–30'–00.00"	Δ_I = 41°–45'–23.84"	
L_{sa}/L_{sb} = 837.00'/837.00'	θ_S = 06°–16'–38.35"	
R = 3819.83'	Δ_C = 29°–12'–07.13"	
L_C = 1946.85'	θ_S = 06°–16'–38.35"	
T_S = 1878.24'/1878.24'	E = 127.48'	
E_a = 5.50"	M = 123.36'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	–3.37"	5.00"
V_{MPH} =	45	100
JERK RATE ENT =	–5.51	1.67
JERK RATE EXT =	–5.51	1.67

CURVE T2–2 – TRACK 2

D_C = 1°–30'–00.00"	Δ_I = 43°–13'–25.12"	
L_{sa}/L_{sb} = 868.00'/837.00'	θ_S = 06°–30'–35.33"	
R = 3819.83'	Δ_C = 30°–26'–11.43"	
L_C = 2029.16'	θ_S = 06°–16'–38.35"	
T_S = 1949.52'/1935.49'	E = 138.82'	
E_a = 5.50"	M = 133.95'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	–2.88"	5.00"
V_{MPH} =	50	100
JERK RATE ENT =	–6.04	1.74
JERK RATE EXT =	–5.82	1.67

CURVE T3–2 – TRACK 3

D_C = 1°–30'–00.00"	Δ_I = 44°–32'–22.23"	
L_{sa}/L_{sb} = 961.00'/372.00'	θ_S = 07°–12'–26.26"	
R = 137509.87'	Δ_C = 34°–32'–32.26"	
L_C = 2302.89'	θ_S = 02°–47'–24.71"	
T_S = 2036.44'/1763.08'	E = 180.37'	
E_a = 1.00"	M = 172.23'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	1.13"	3.44"
V_{MPH} =	45	65
JERK RATE ENT =	18.97	4.30
JERK RATE EXT =	7.34	1.67

0 40 80
SCALE IN FEET

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS

A Parsons Brinckerhoff/Parsons Joint Venture

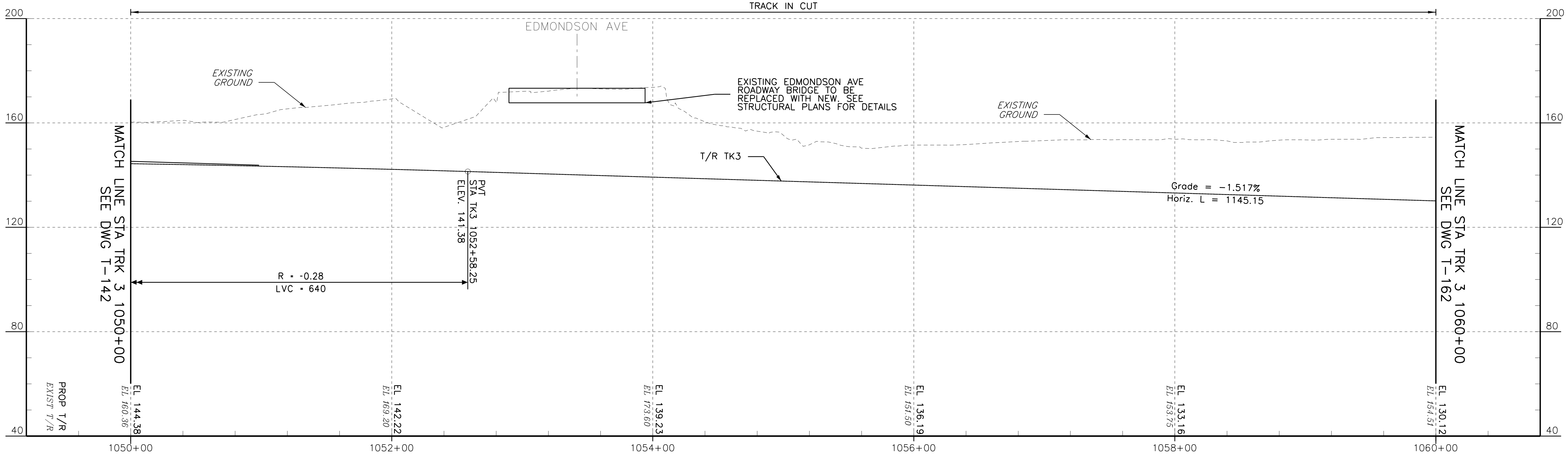
BALTIMORE, MD MPXX
B&P TUNNEL

TRACK PLAN
STA TK2 1050+00 TO STA TK2 1060+00

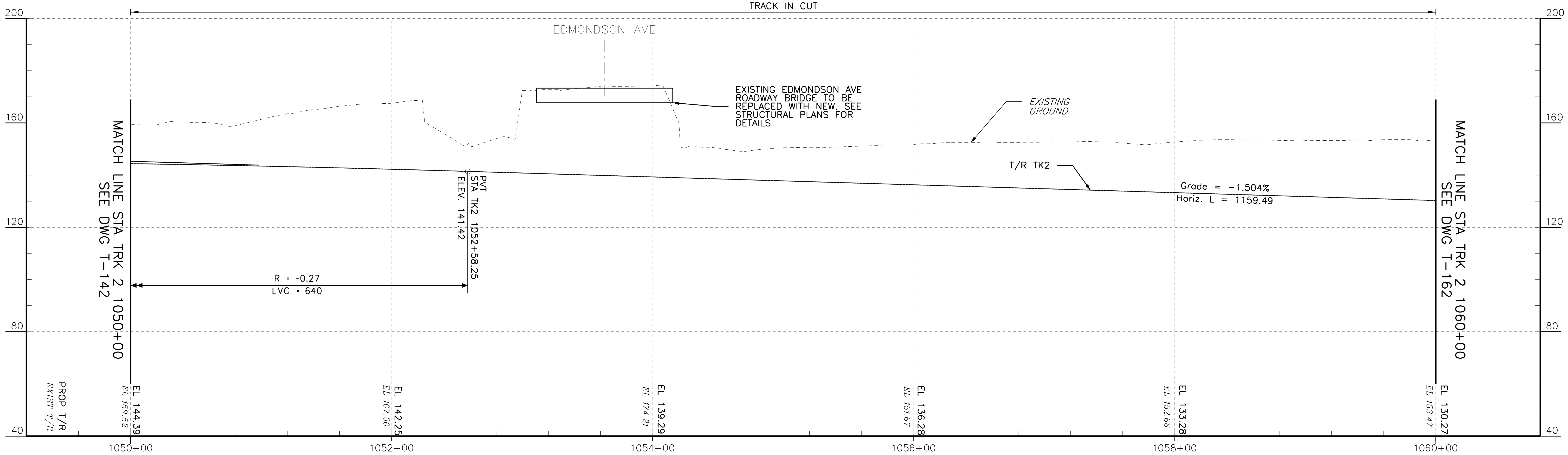
Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–151

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved Date

WORK IN PROGRESS

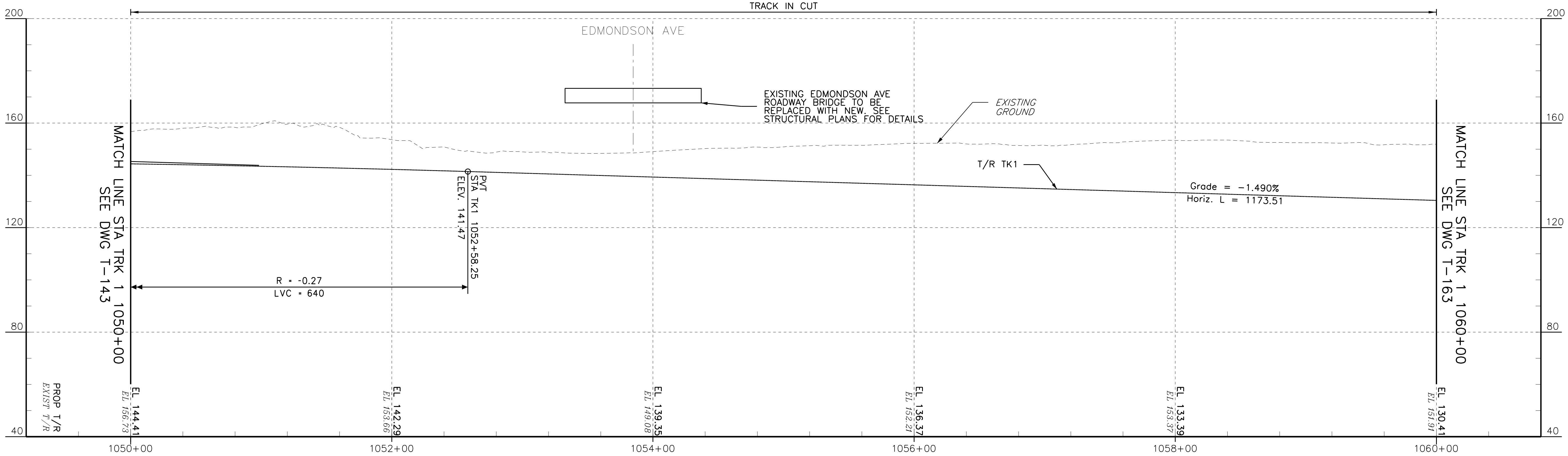
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

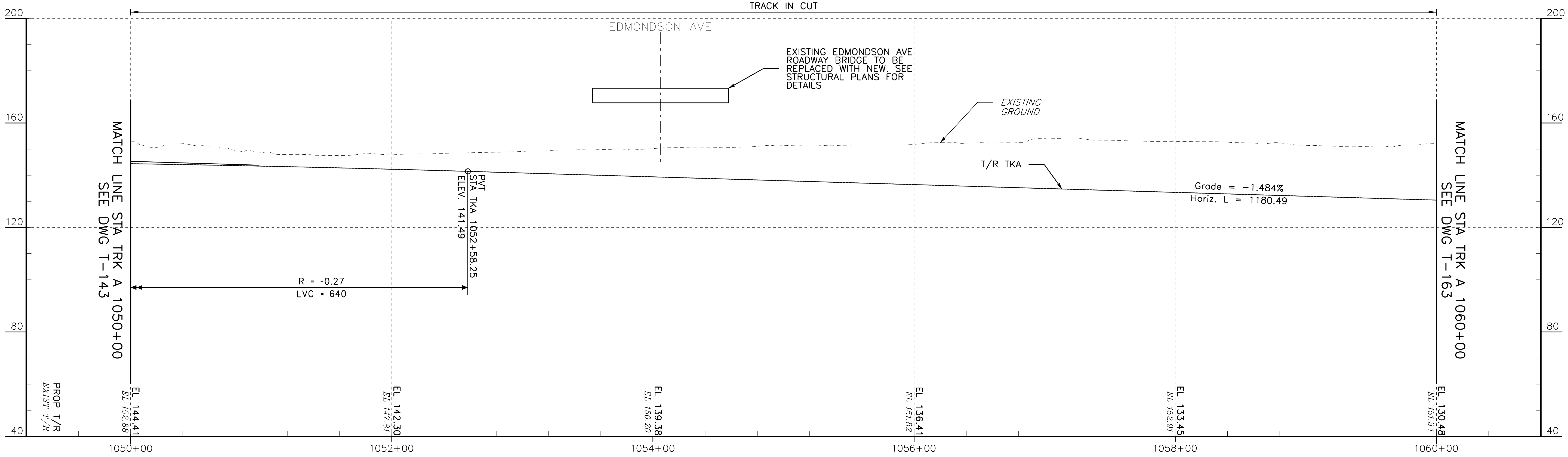
PROFILES – TRACK 2 & TRACK 3
STA. 1050+00 TO STA. 1060+00

Designed DO Drawn JB Checked FB Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–152



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

A Parsons Brinckerhoff/Parsons Joint Venture

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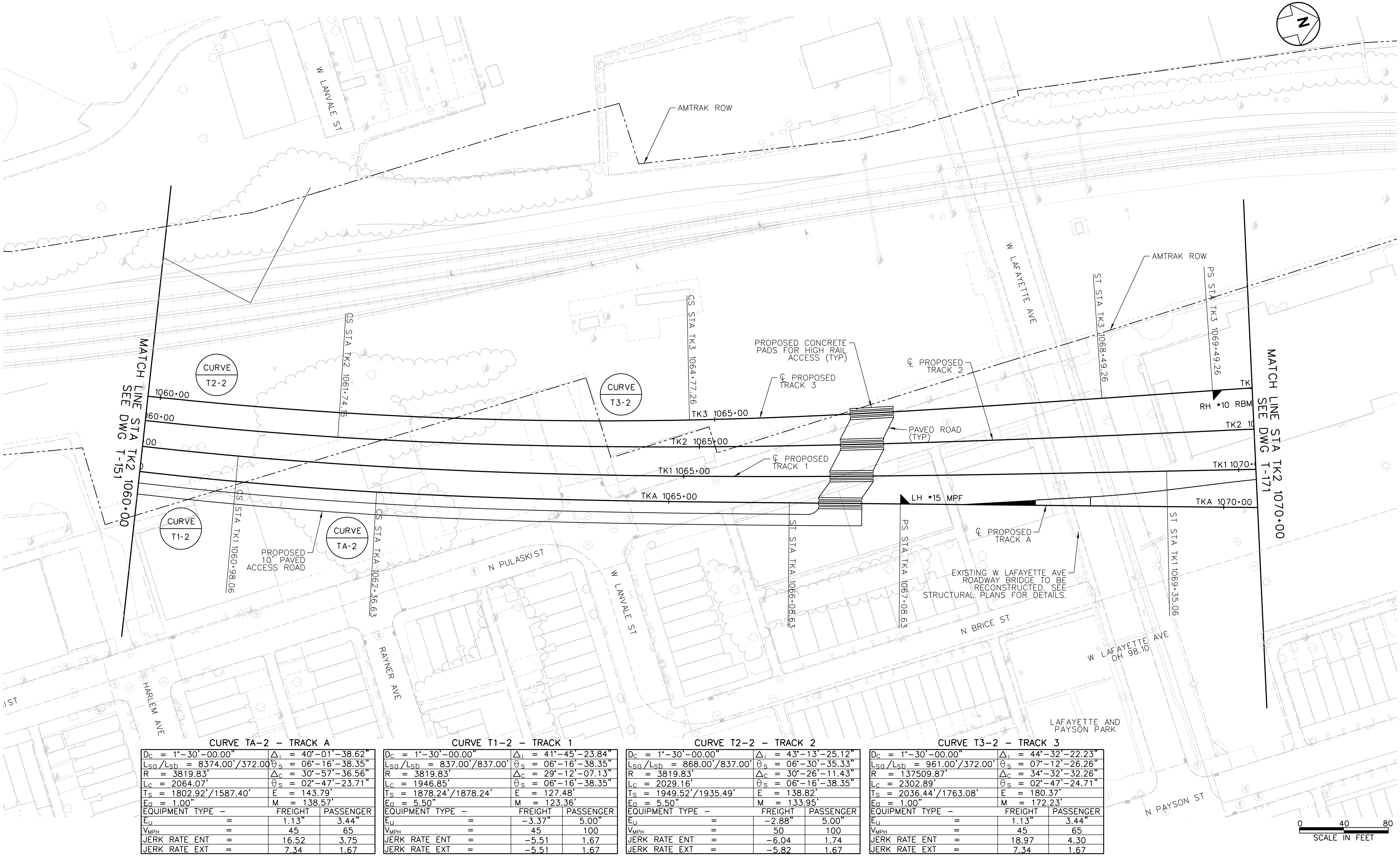
B&P TUNNEL

PROFILES – TRACK A & TRACK 1
STA. 1050+00 TO STA. 1060+00

Designed DO	Drawn JB	Checked FB	Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-153



CURVE TA-2 – TRACK A

D_C = 1°-30'-00.00"	Δ_I = 40°-01'-38.62"	
L_{sa}/L_{sb} = 8374.00'/372.00'	θ_S = 06°-16'-38.35"	
R = 3819.83'	Δ_C = 30°-57'-36.56"	
L_C = 2064.07'	θ_S = 02°-47'-23.71"	
T_S = 1802.92'/1587.40'	E = 143.79'	
E_a = 1.00"	M = 138.57'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	1.13"	3.44"
V_{MPH} =	45	65
JERK RATE ENT =	16.52	3.75
JERK RATE EXT =	7.34	1.67

CURVE T1-2 – TRACK 1

D_C = 1°-30'-00.00"	Δ_I = 41°-45'-23.84"	
L_{sa}/L_{sb} = 837.00'/837.00'	θ_S = 06°-16'-38.35"	
R = 3819.83'	Δ_C = 29°-12'-07.13"	
L_C = 1946.85'	θ_S = 06°-16'-38.35"	
T_S = 1878.24'/1878.24'	E = 127.48'	
E_a = 5.50"	M = 123.36'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-3.37"	5.00"
V_{MPH} =	45	100
JERK RATE ENT =	-5.51	1.67
JERK RATE EXT =	-5.51	1.67

CURVE T2-2 – TRACK 2

D_C = 1°-30'-00.00"	Δ_I = 43°-13'-25.12"	
L_{sa}/L_{sb} = 868.00'/837.00'	θ_S = 06°-30'-35.33"	
R = 3819.83'	Δ_C = 30°-26'-11.43"	
L_C = 2029.16'	θ_S = 06°-16'-38.35"	
T_S = 1949.52'/1935.49'	E = 138.82'	
E_a = 5.50"	M = 133.95'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-2.88"	5.00"
V_{MPH} =	50	100
JERK RATE ENT =	-6.04	1.74
JERK RATE EXT =	-5.82	1.67

CURVE T3-2 – TRACK 3

D_C = 1°-30'-00.00"	Δ_I = 44°-32'-22.23"	
L_{sa}/L_{sb} = 961.00'/372.00'	θ_S = 07°-12'-26.26"	
R = 137509.87'	Δ_C = 34°-32'-32.26"	
L_C = 2302.89'	θ_S = 02°-47'-24.71"	
T_S = 2036.44'/1763.08'	E = 180.37'	
E_a = 1.00"	M = 172.23'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	1.13"	3.44"
V_{MPH} =	45	65
JERK RATE ENT =	18.97	4.30
JERK RATE EXT =	7.34	1.67

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved | Date

WORK IN PROGRESS

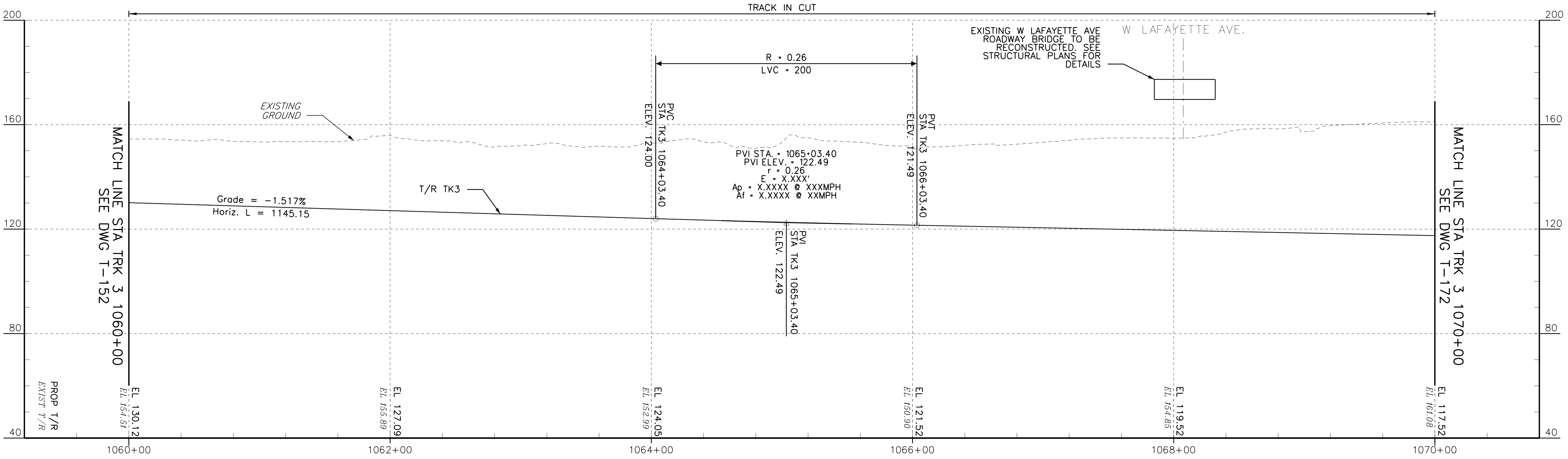
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

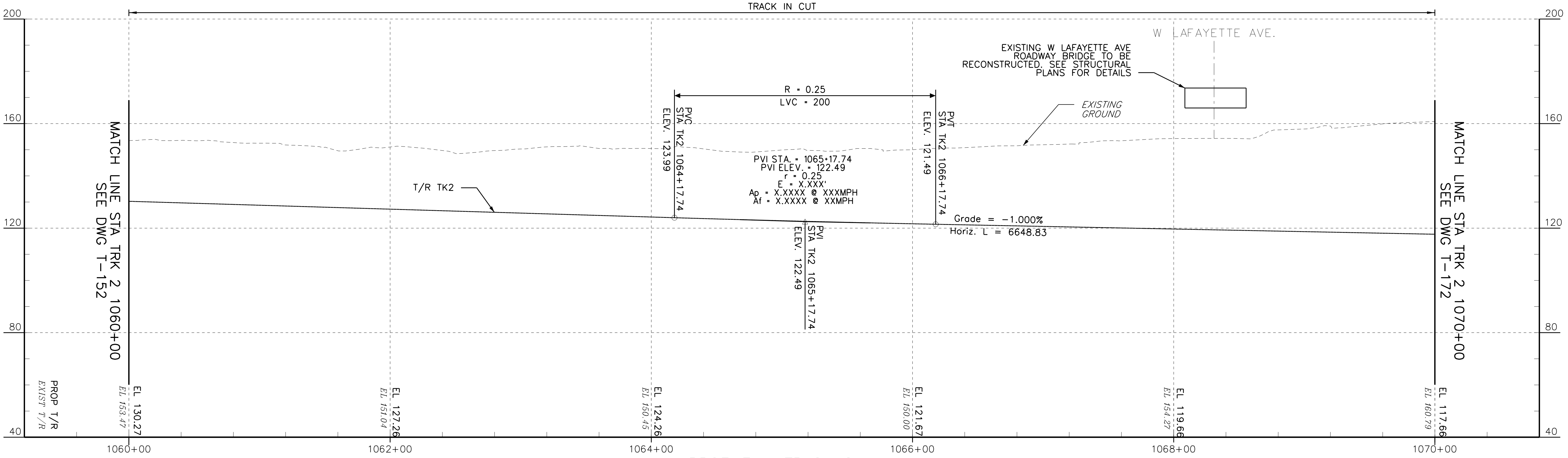
TRACK PLAN
STA TK2 1060+00 TO STA TK2 1070+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-161



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS

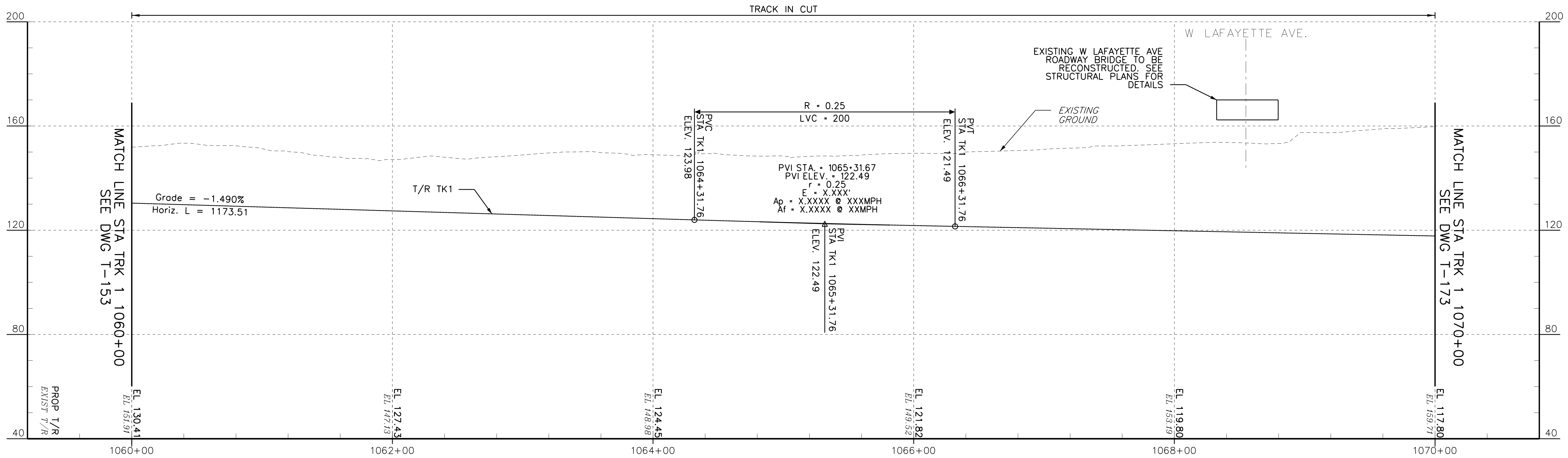
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

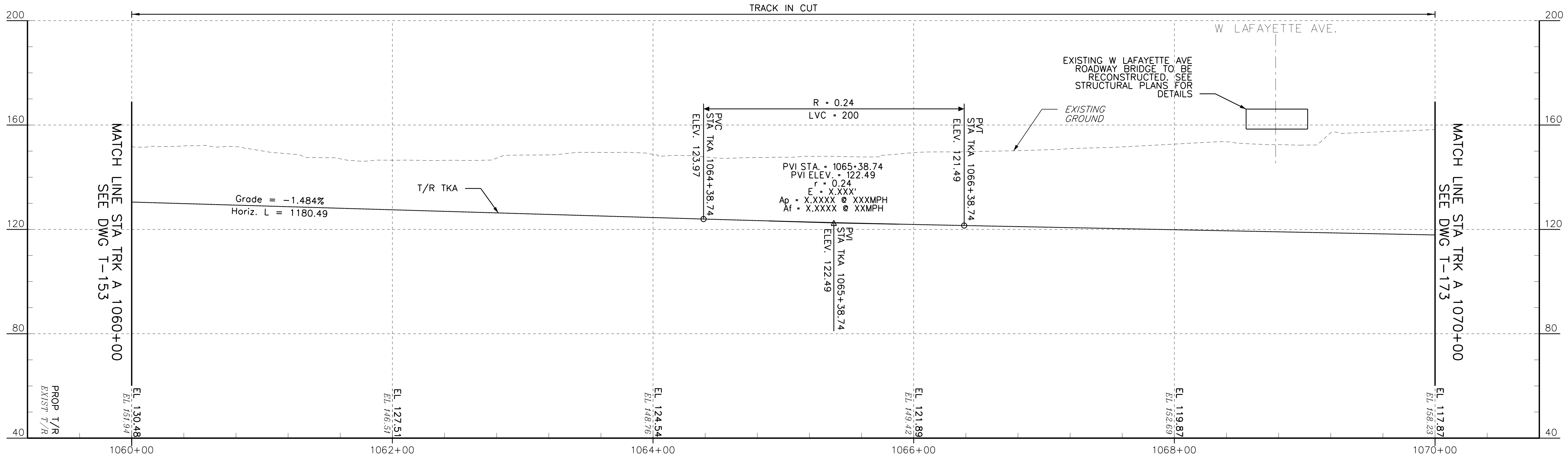
PROFILES – TRACK 2 & TRACK 3
STA. 1060+00 TO STA. 1070+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–162



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

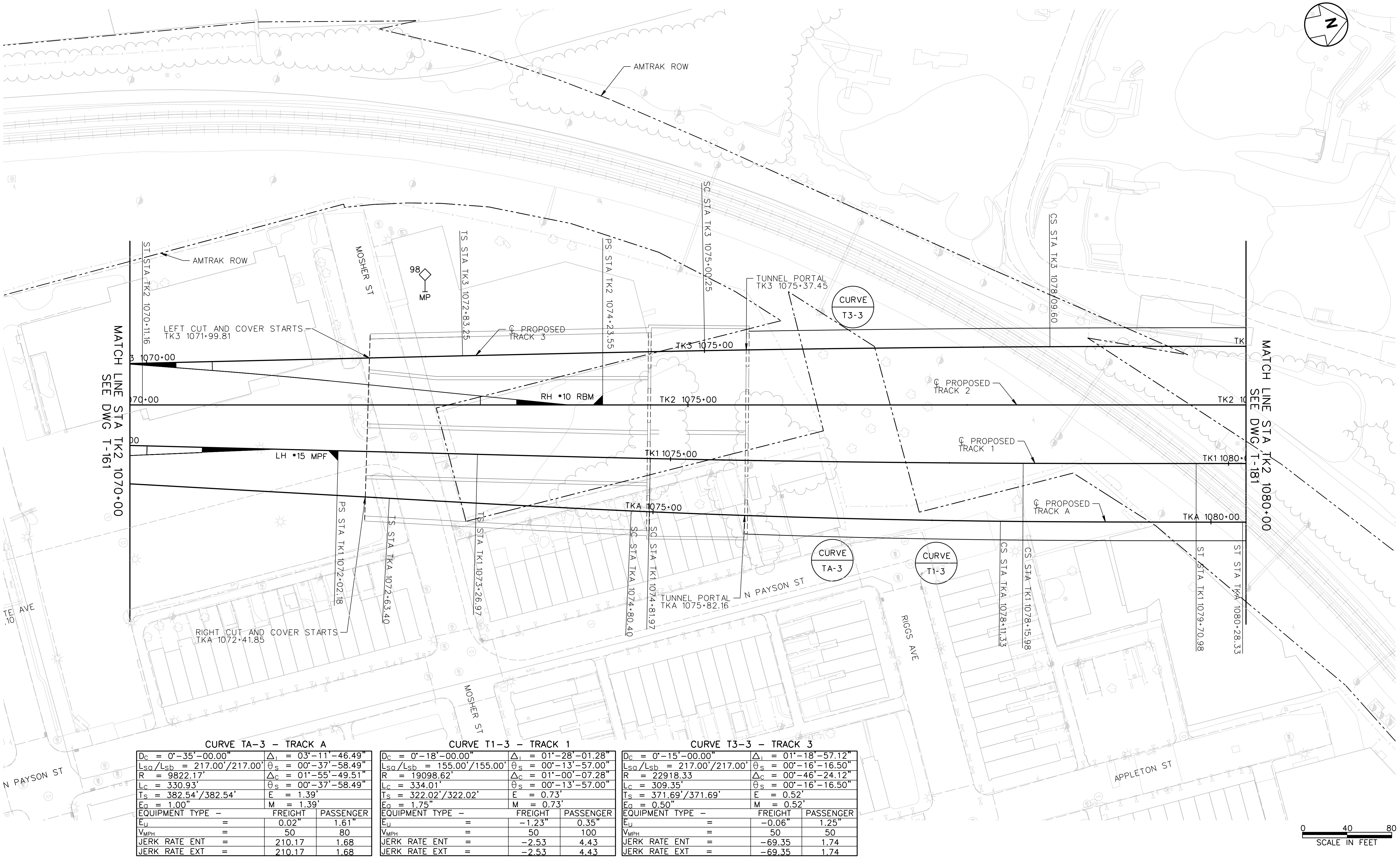
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILES – TRACK A & TRACK 1
STA. 1060+00 TO STA. 1070+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–163



CURVE TA-3 – TRACK A

D_C = 0°-35'-00.00"		Δ_I = 03°-11'-46.49"	
L_{sa}/L_{sb} = 217.00'/217.00'		θ_S = 00°-37'-58.49"	
R = 9822.17'		Δ_C = 01°-55'-49.51"	
L_C = 330.93'		θ_S = 00°-37'-58.49"	
T_S = 382.54'/382.54'		E = 1.39'	
E_a = 1.00"		M = 1.39'	
EQUIPMENT TYPE –		FREIGHT	PASSENGER
E_u	=	0.02"	1.61"
V_{MPH}	=	50	80
JERK RATE ENT	=	210.17	1.68
JERK RATE EXT	=	210.17	1.68

CURVE T1-3 – TRACK 1

D_C = 0°-18'-00.00"		Δ_I = 01°-28'-01.28"	
L_{sa}/L_{sb} = 155.00'/155.00'		θ_S = 00°-13'-57.00"	
R = 19098.62'		Δ_C = 01°-00'-07.28"	
L_C = 334.01'		θ_S = 00°-13'-57.00"	
T_S = 322.02'/322.02'		E = 0.73'	
E_a = 1.75"		M = 0.73'	
EQUIPMENT TYPE –		FREIGHT	PASSENGER
E_u	=	-1.23"	0.35"
V_{MPH}	=	50	100
JERK RATE ENT	=	-2.53	4.43
JERK RATE EXT	=	-2.53	4.43

CURVE T3-3 – TRACK 3

D_C = 0°-15'-00.00"		Δ_I = 01°-18'-57.12"	
L_{sa}/L_{sb} = 217.00'/217.00'		θ_S = 00°-16'-16.50"	
R = 22918.33		Δ_C = 00°-46'-24.12"	
L_C = 309.35'		θ_S = 00°-16'-16.50"	
T_S = 371.69'/371.69'		E = 0.52'	
E_a = 0.50"		M = 0.52'	
EQUIPMENT TYPE –		FREIGHT	PASSENGER
E_u	=	-0.06"	1.25"
V_{MPH}	=	50	50
JERK RATE ENT	=	-69.35	1.74
JERK RATE EXT	=	-69.35	1.74

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

AMTRAK®

Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

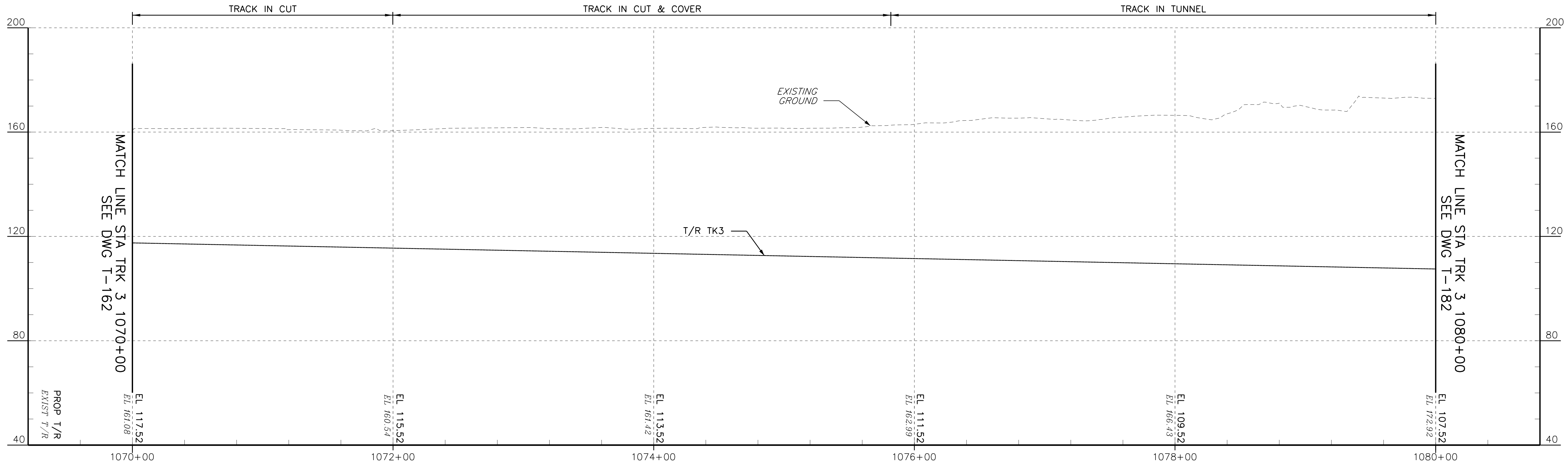
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD
B&P TUNNEL
MPXX

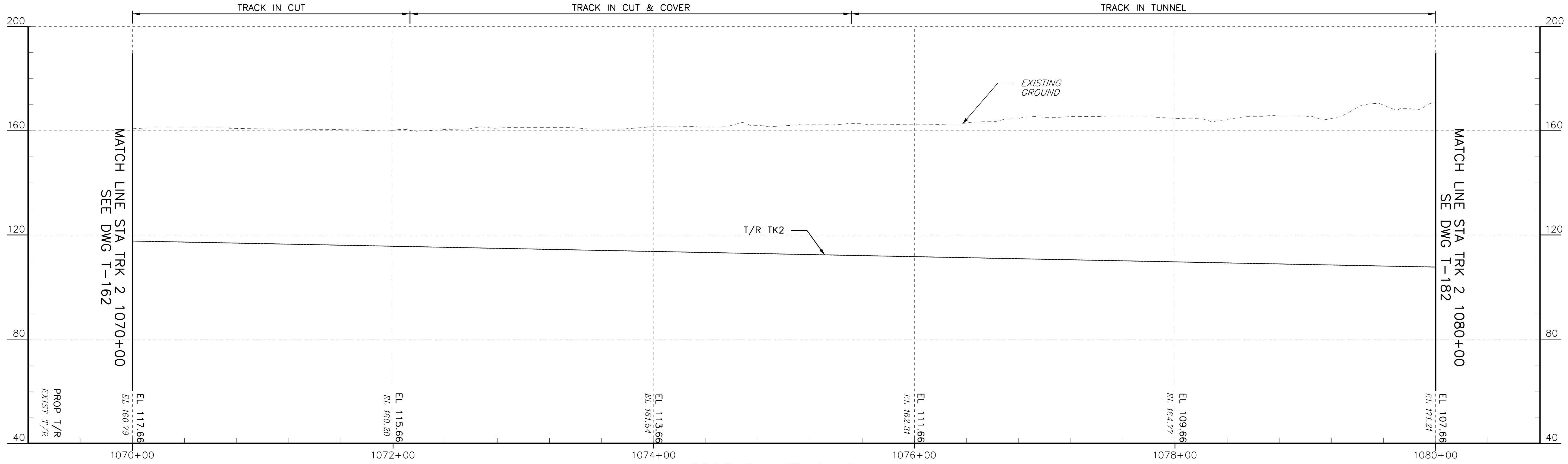
TRACK PLAN
STA TK2 1070+00 TO STA TK2 1080+00

Designed	DO	Drawn	JB	Checked	FB	Date	09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-171



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

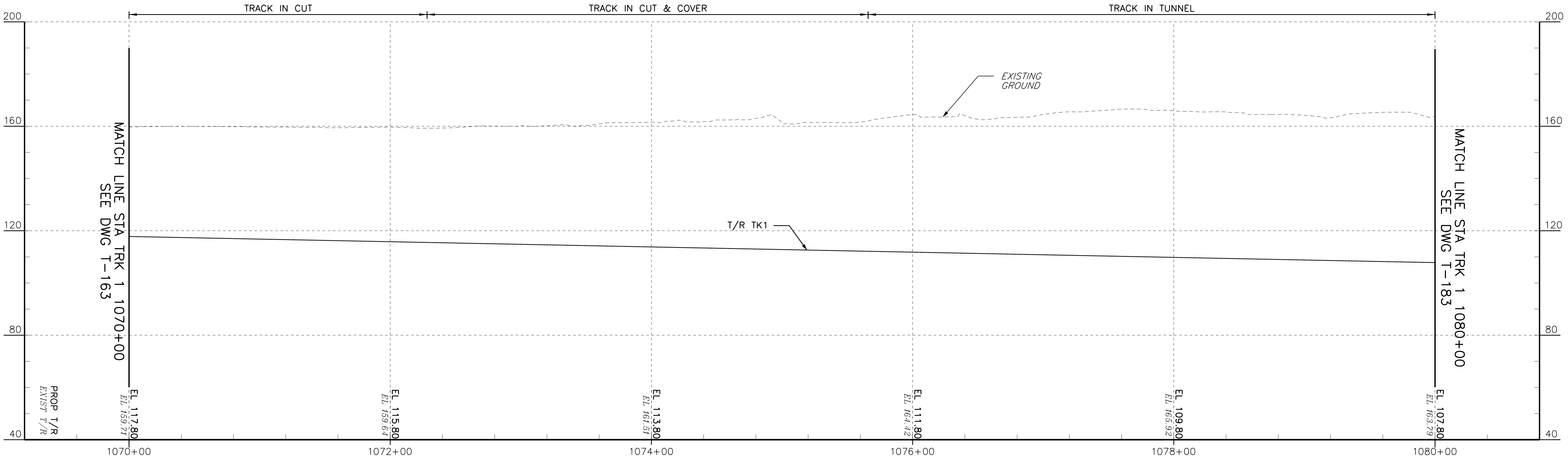
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

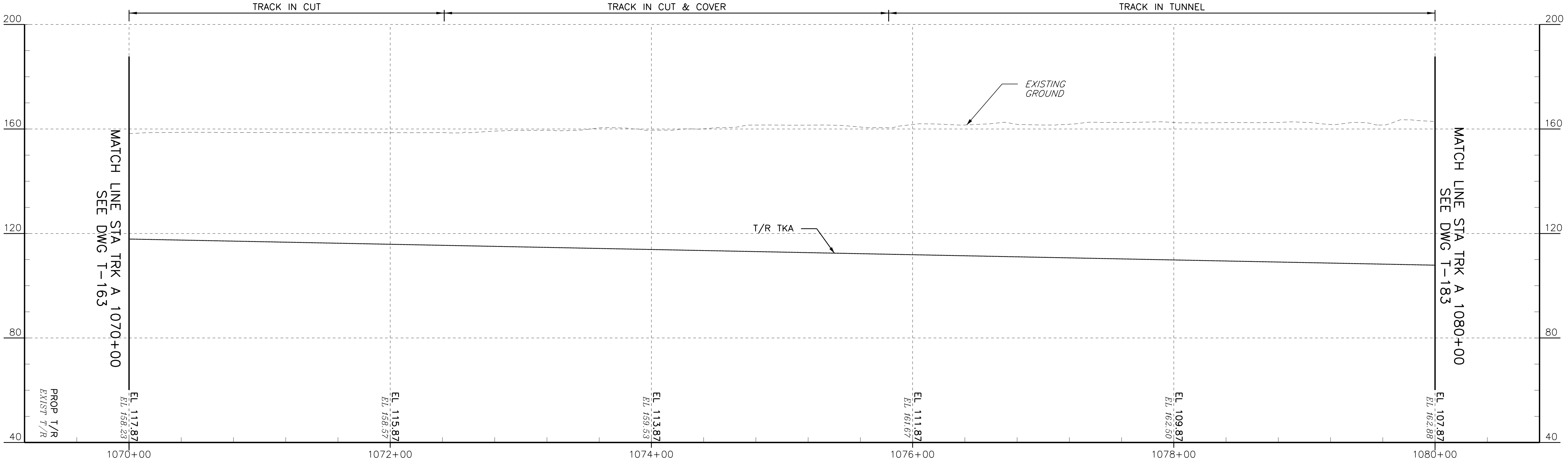
PROFILES – TRACK 2 & TRACK 3
STA. 1070+00 TO STA. 1080+00

Designed	DO	Drawn	JB	Checked	FB	Date	09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-172



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

No.	Revisions	Date	By

AMTRAK

Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

A Parsons Brinckerhoff/Parsons Joint Venture

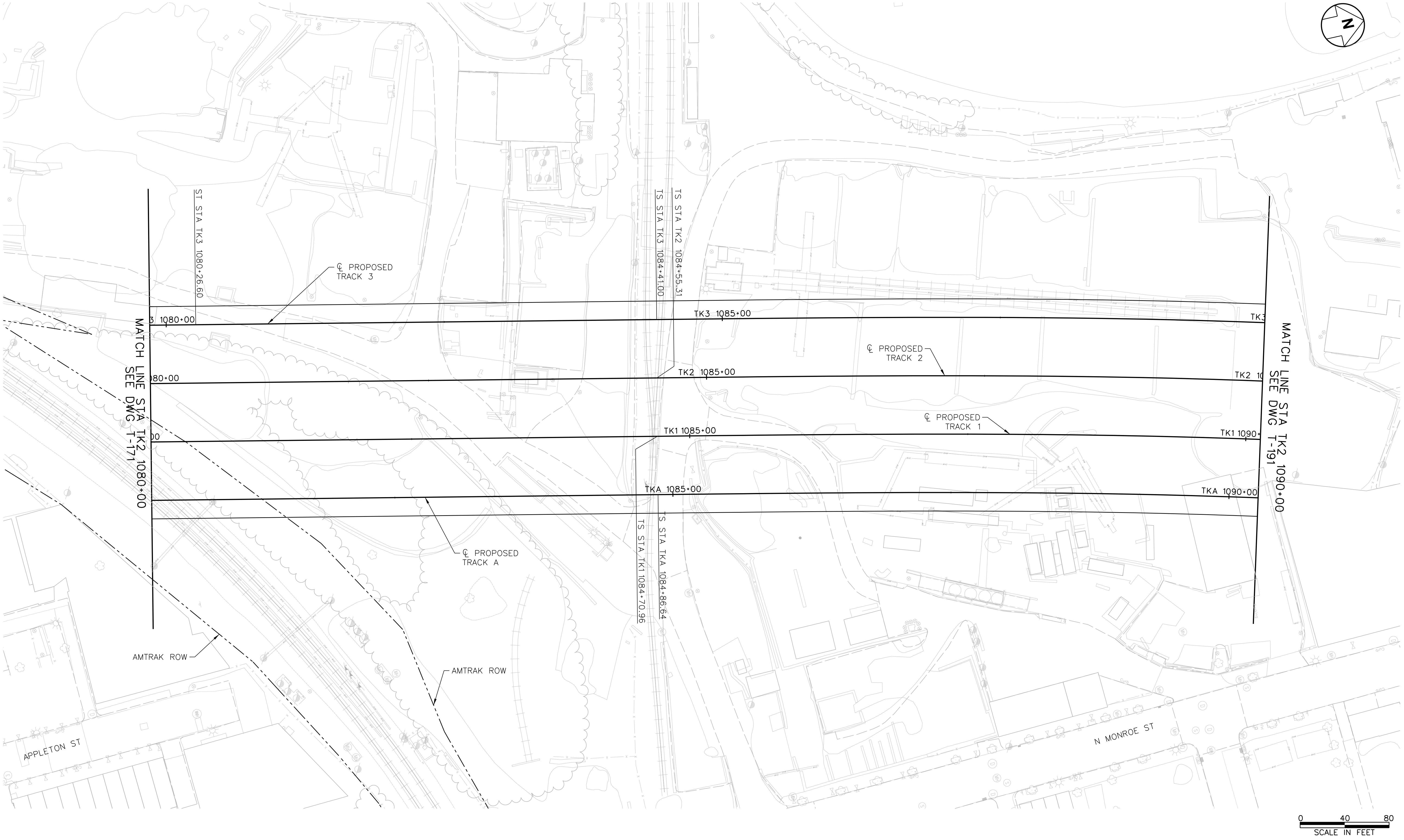
BALTIMORE, MD MPXX
B&P TUNNEL

PROFILES – TRACK A & TRACK 1
STA. 1070+00 TO STA. 1080+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–173

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO



$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved Date

WORK IN PROGRESS

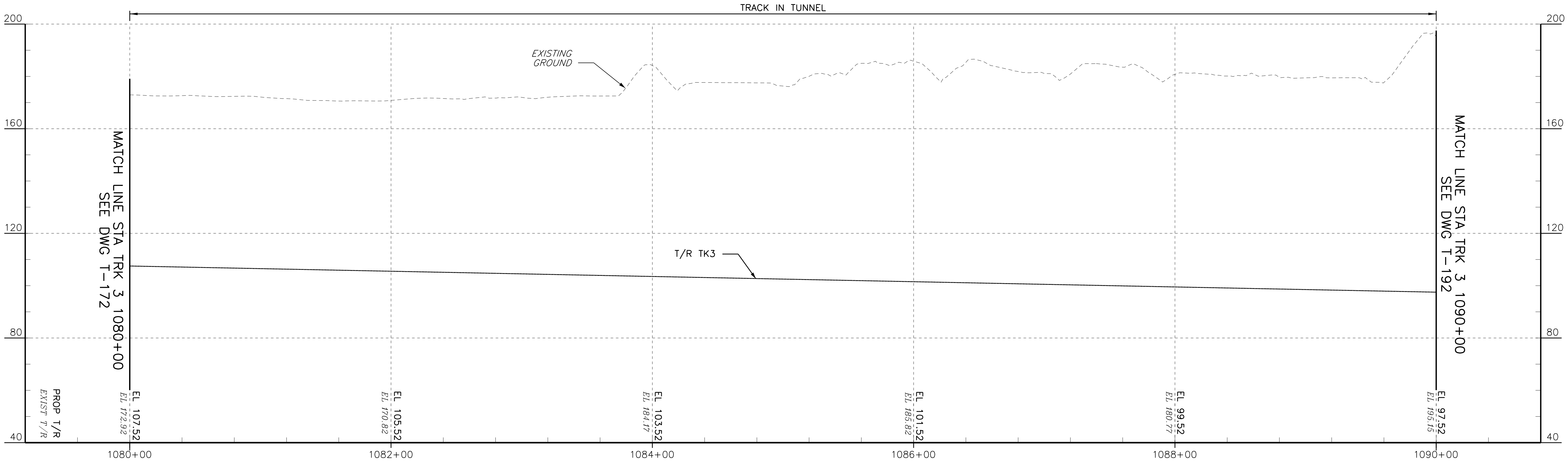
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

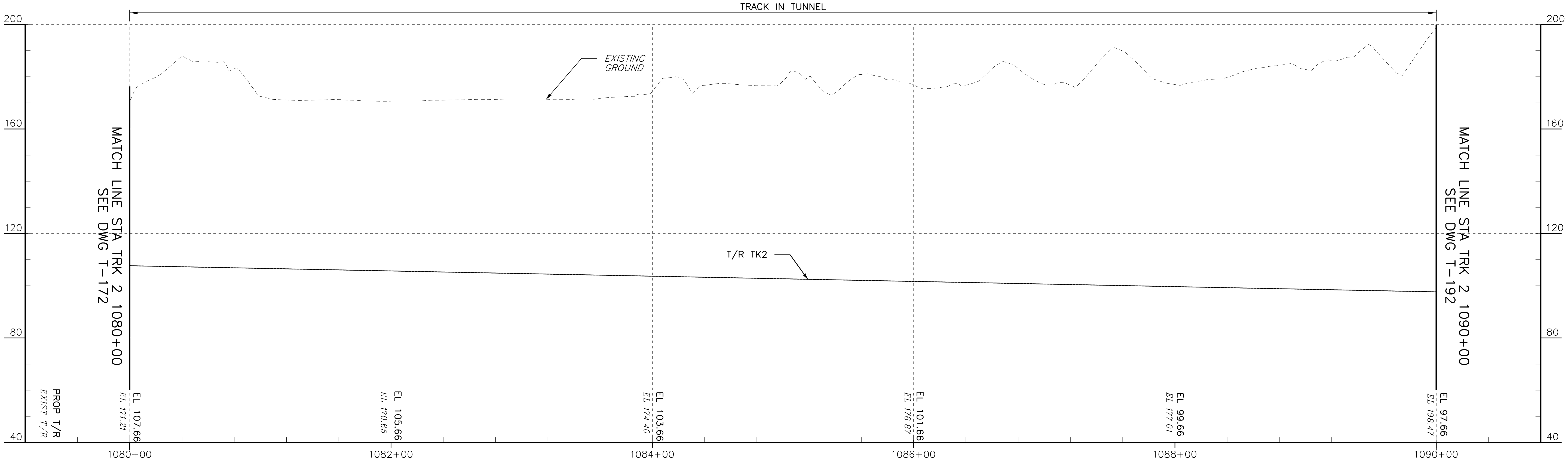
TRACK PLAN
STA TK2 1080+00 TO STA TK2 1090+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–181



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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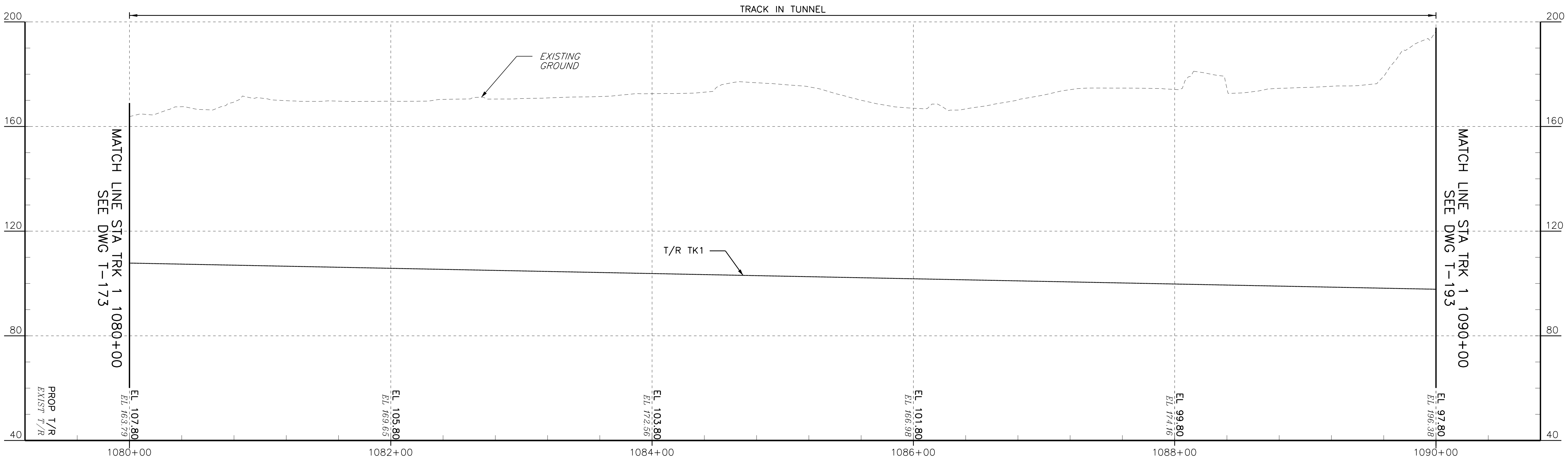
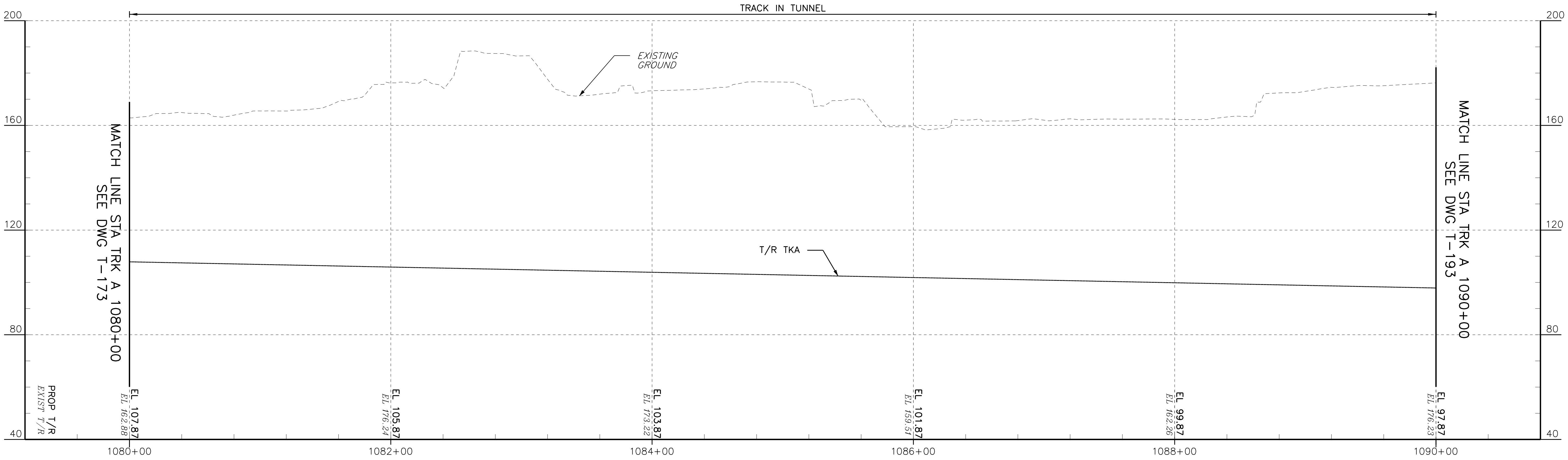
PROFILES – TRACK 2 & TRACK 3
STA. 1080+00 TO STA. 1090+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

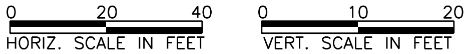
Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–182



PROFILE – TRACK 1



PROFILE – TRACK A



$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS	

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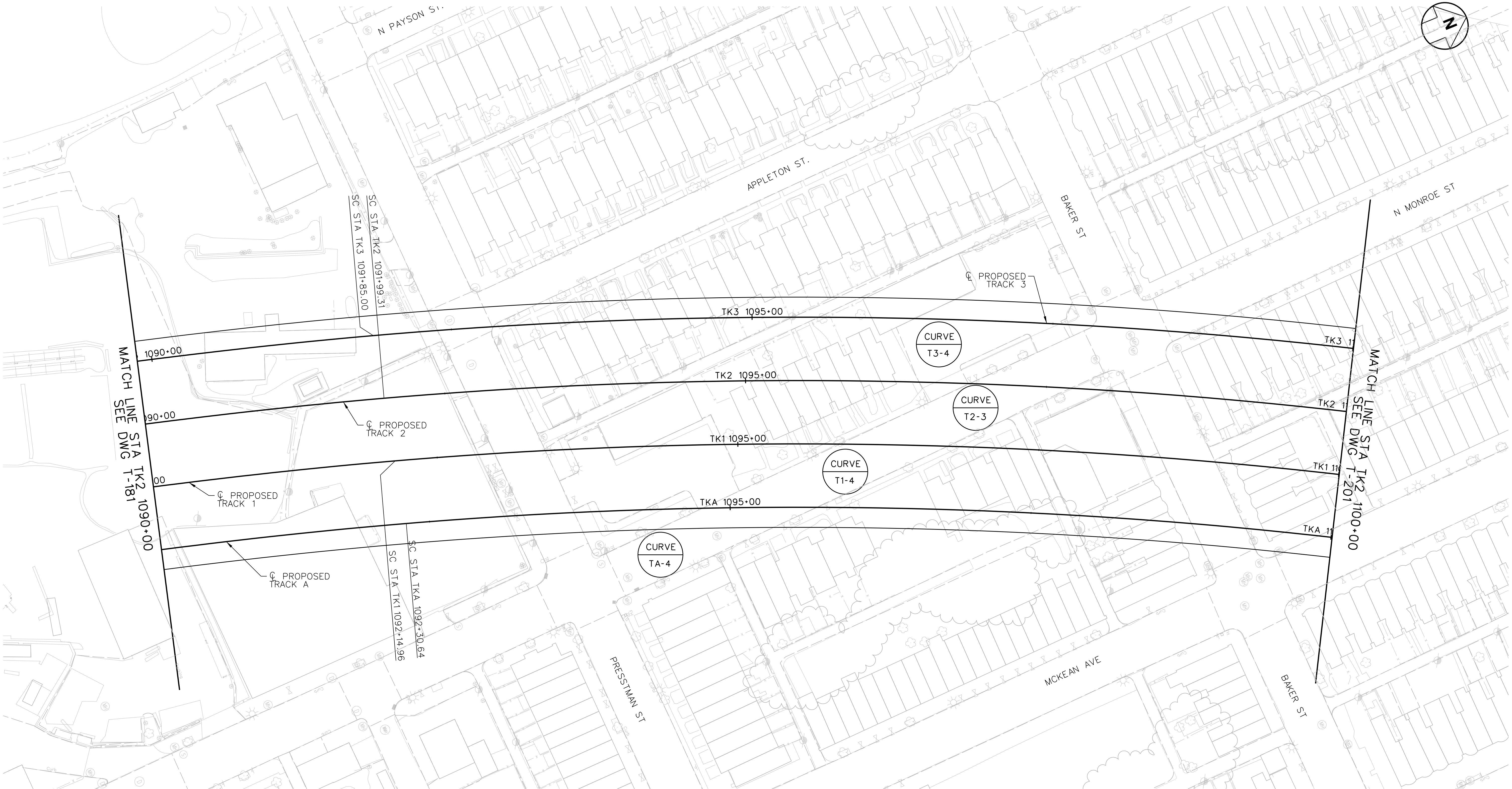
PROFILES – TRACK A & TRACK 1
STA. 1080+00 TO STA. 1090+00

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–183

Designed DO | Drawn JB | Checked FB | Date 09/28/2016



CURVE TA-4 – TRACK A

D_C = 1°-27'-15.94"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-24'-37.17"	
R = 3939.51'	Δ_C = 61°-17'-53.92"	
L_C = 4214.71'	θ_S = 05°-24'-37.17"	
T_S = 3244.63'/3244.63'	E = 639.69'	
E_a = 2.75"	M = 550.33'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-0.21"	3.76"
V_{MPH} =	50	50
JERK RATE ENT =	-72.49	2.47
JERK RATE EXT =	-72.49	2.47

CURVE T1-4 – TRACK 1

D_C = 1°-26'-07.07"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-20'-21.02"	
R = 3992.01'	Δ_C = 61°-26'-26.22"	
L_C = 4280.80'	θ_S = 05°-20'-21.02"	
T_S = 3282.80'/3282.80'	E = 651.64'	
E_a = 5.50"	M = 560.19'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-2.99"	4.55"
V_{MPH} =	50	100
JERK RATE ENT =	-4.98	1.64
JERK RATE EXT =	-4.98	1.64

CURVE T2-3 – TRACK 2

D_C = 1°-25'-00.00"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-16'-11.52"	
R = 4044.51'	Δ_C = 61°-34'-45.22"	
L_C = 4346.88'	θ_S = 05°-16'-11.52"	
T_S = 3320.98'/3320.98'	E = 663.59'	
E_a = 5.50"	M = 570.06'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-3.02"	4.41"
V_{MPH} =	50	100
JERK RATE ENT =	-4.92	1.69
JERK RATE EXT =	-4.92	1.69

CURVE T3-4 – TRACK 3

D_C = 1°-23'-55.26"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-12'-10.70"	
R = 4096.51'	Δ_C = 61°-42'-46.86"	
L_C = 4412.33'	θ_S = 05°-12'-10.70"	
T_S = 3358.79'/3358.79'	E = 675.45'	
E_a = 2.50"	M = 579.84'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-0.05"	2.30"
V_{MPH} =	50	50
JERK RATE ENT =	-281.84	4.63
JERK RATE EXT =	-281.84	4.63

0 40 80
SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS

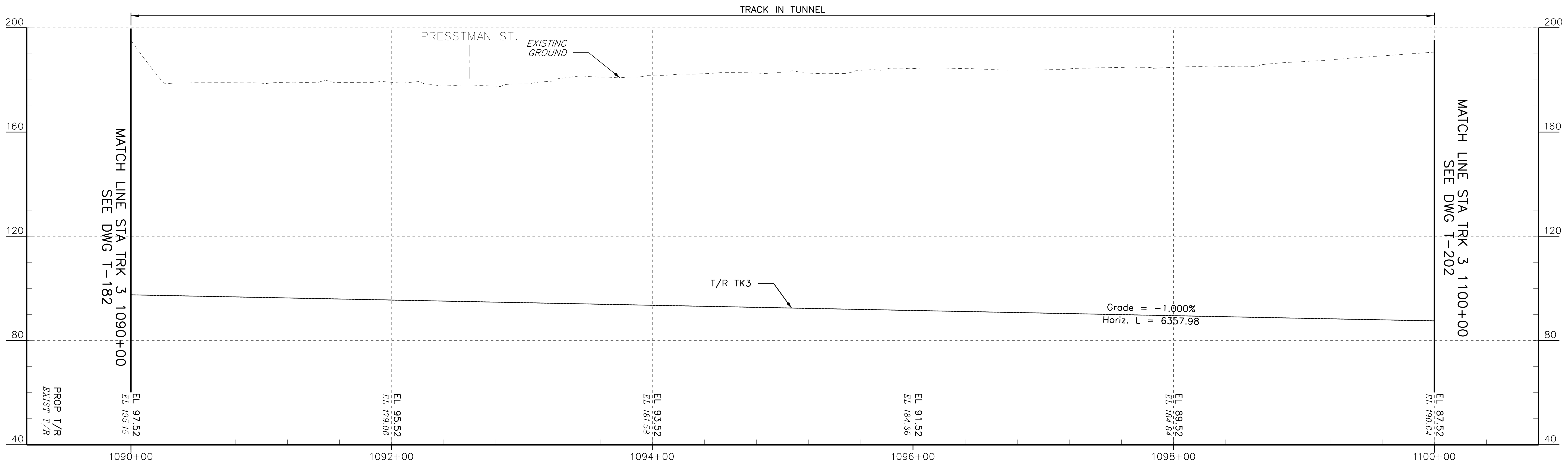
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

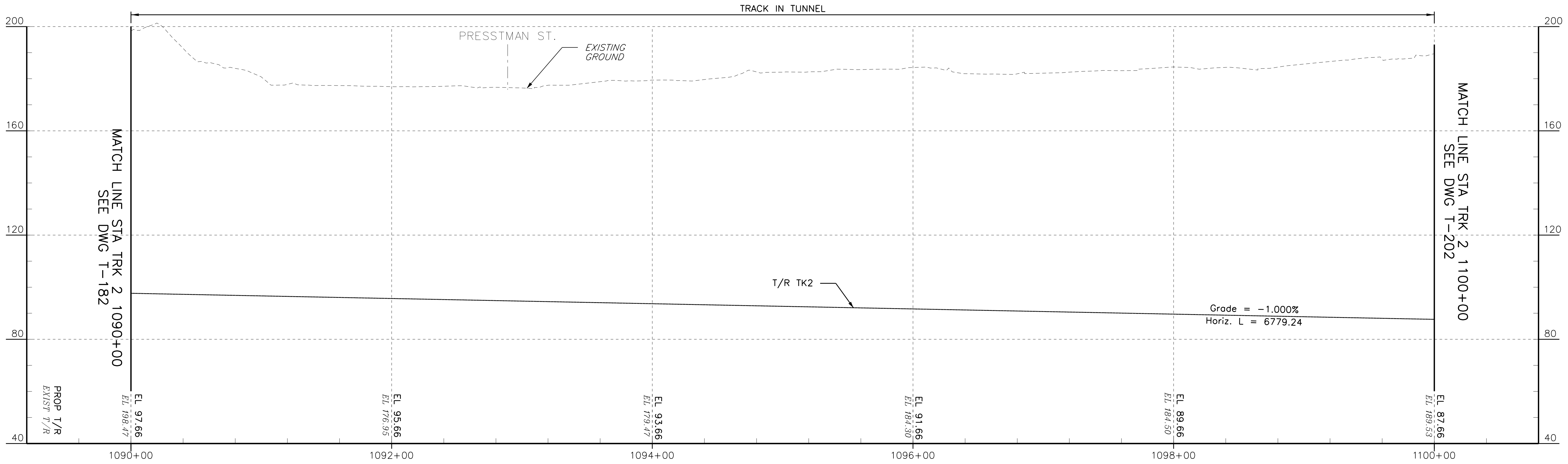
TRACK PLAN
STA TK2 1090+00 TO STA TK2 1100+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-191



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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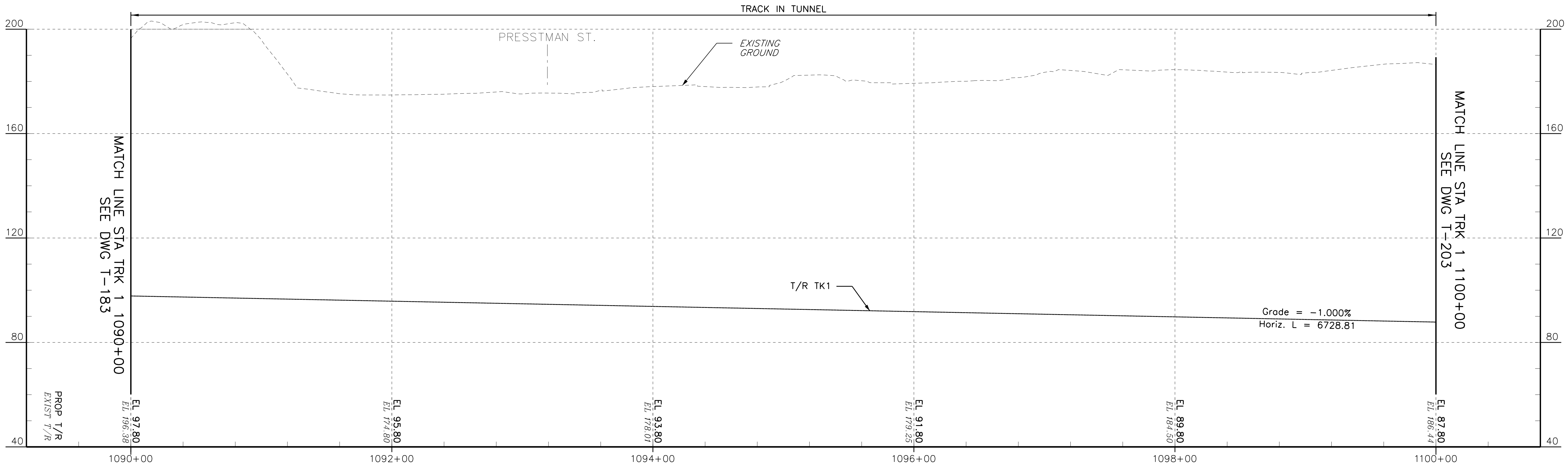
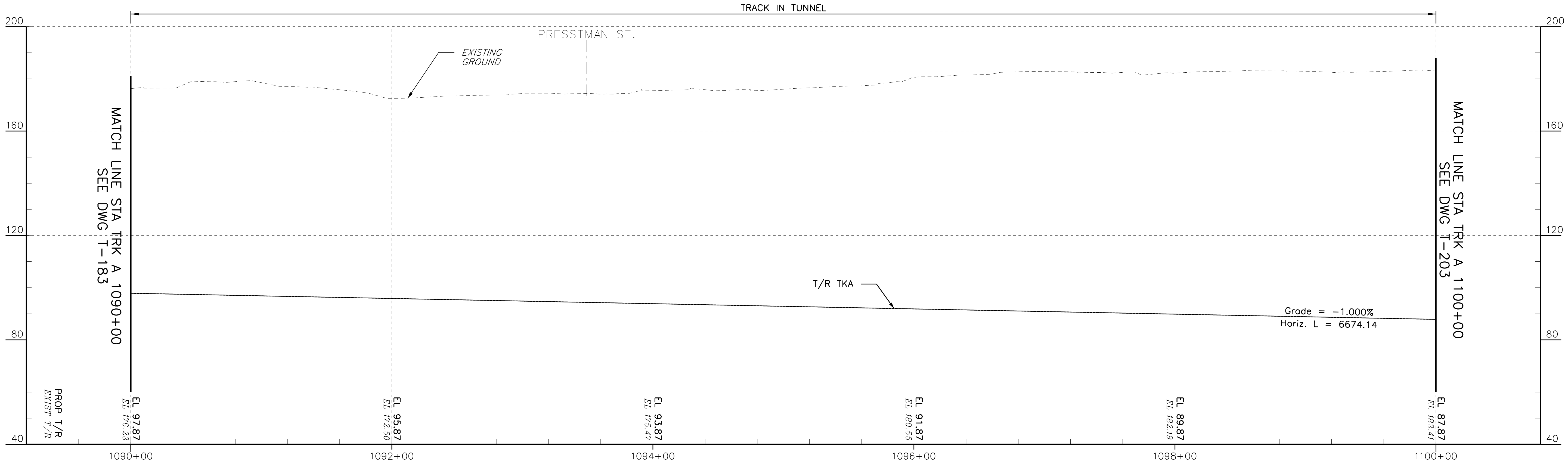
PROFILES – TRACK 2 & TRACK 3
STA. 1090+00 TO STA. 1100+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-192



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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Date
WORK IN PROGRESS

A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD
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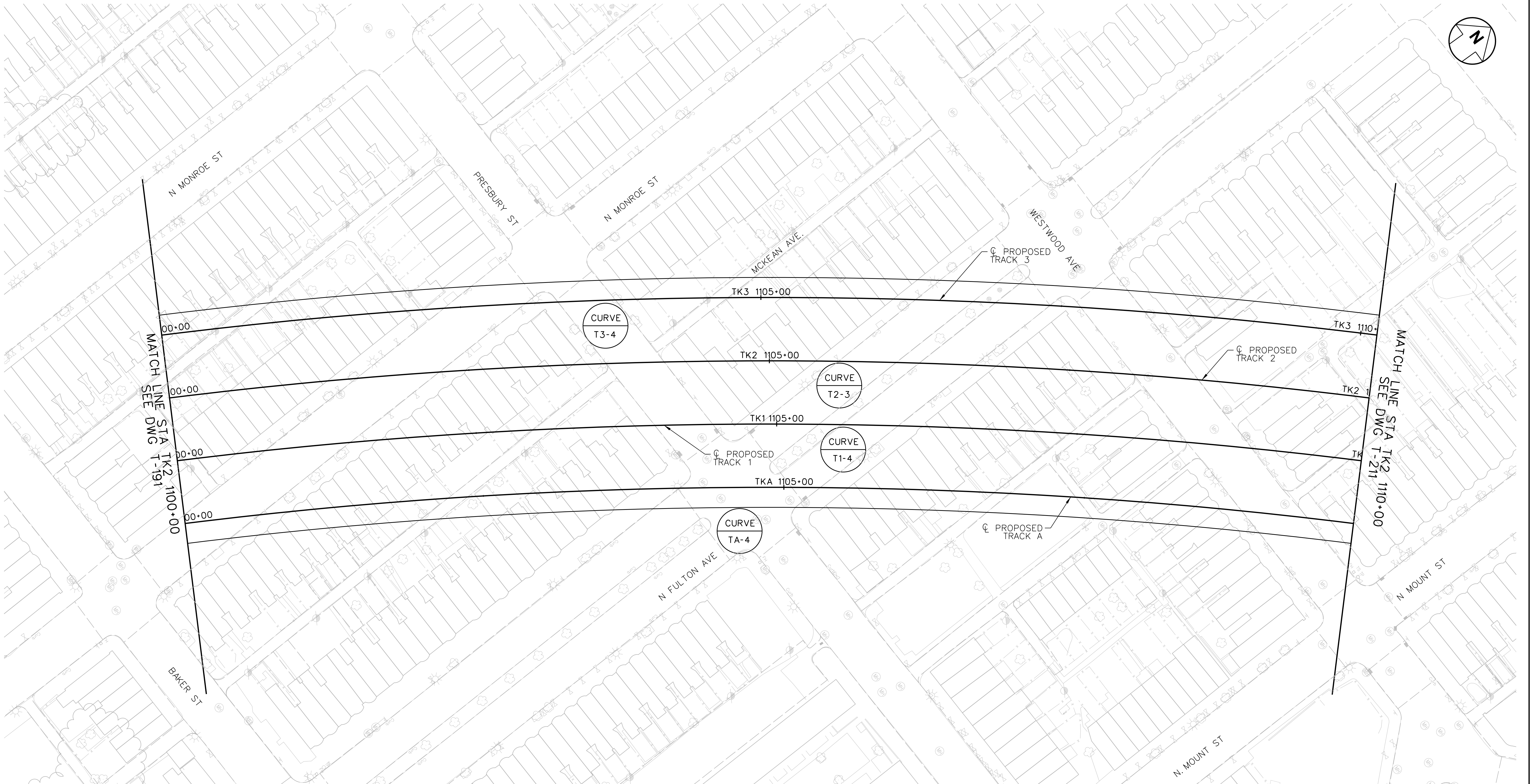
B&P TUNNEL

PROFILES – TRACK A & TRACK 1
STA. 1090+00 TO STA. 1100+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
File name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-193



CURVE TA-4 – TRACK A

D_C = 1°-27'-15.94"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-24'-37.17"	
R = 3939.51'	Δ_C = 61°-17'-53.92"	
L_C = 4214.71'	θ_S = 05°-24'-37.17"	
T_S = 3244.63'/3244.63'	E = 639.69'	
E_a = 2.75"	M = 550.33'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-0.21"	3.76"
V_{MPH} =	50	50
JERK RATE ENT =	-72.49	2.47
JERK RATE EXT =	-72.49	2.47

CURVE T1-4 – TRACK 1

D_C = 1°-26'-07.07"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-20'-21.02"	
R = 3992.01'	Δ_C = 61°-26'-26.22"	
L_C = 4280.80'	θ_S = 05°-20'-21.02"	
T_S = 3282.80'/3282.80'	E = 651.64'	
E_a = 5.50"	M = 560.19'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-2.99"	4.55"
V_{MPH} =	50	100
JERK RATE ENT =	-4.98	1.64
JERK RATE EXT =	-4.98	1.64

CURVE T2-3 – TRACK 2

D_C = 1°-25'-00.00"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-16'-11.52"	
R = 4044.51'	Δ_C = 61°-34'-45.22"	
L_C = 4346.88'	θ_S = 05°-16'-11.52"	
T_S = 3320.98'/3320.98'	E = 663.59'	
E_a = 5.50"	M = 570.06'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-3.02"	4.41"
V_{MPH} =	50	100
JERK RATE ENT =	-4.92	1.69
JERK RATE EXT =	-4.92	1.69

CURVE T3-4 – TRACK 3

D_C = 1°-23'-55.26"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-12'-10.70"	
R = 4096.51'	Δ_C = 61°-42'-46.86"	
L_C = 4412.33'	θ_S = 05°-12'-10.70"	
T_S = 3358.79'/3358.79'	E = 675.45'	
E_a = 2.50"	M = 579.84'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	-0.05"	2.30"
V_{MPH} =	50	50
JERK RATE ENT =	-281.84	4.63
JERK RATE EXT =	-281.84	4.63

0 20 40
SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

AMTRAK®

Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS

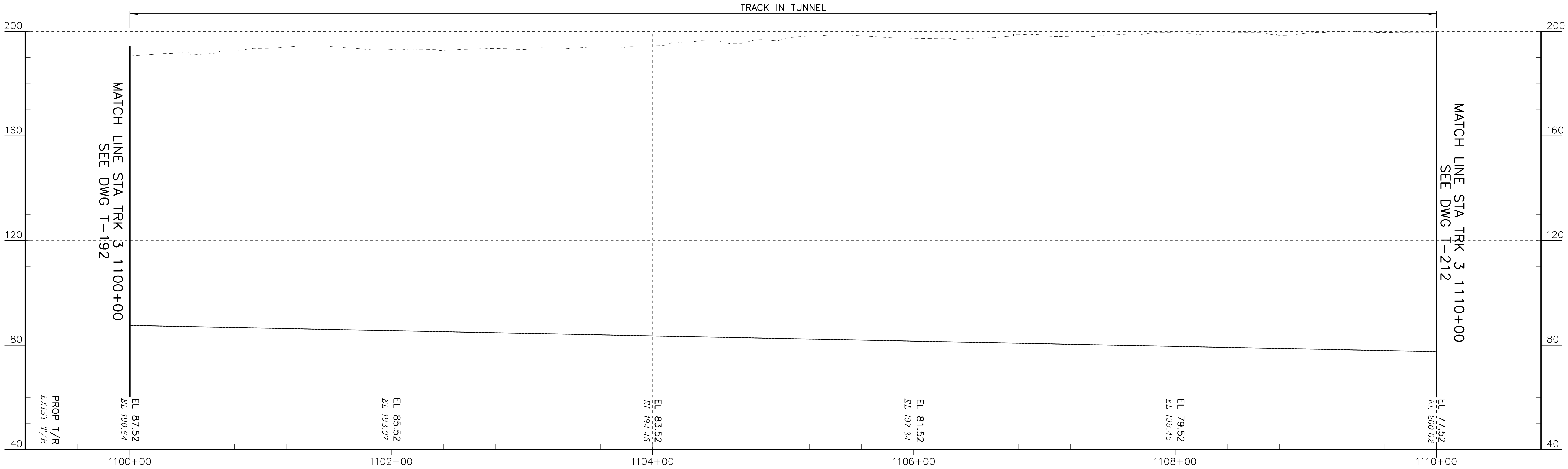
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

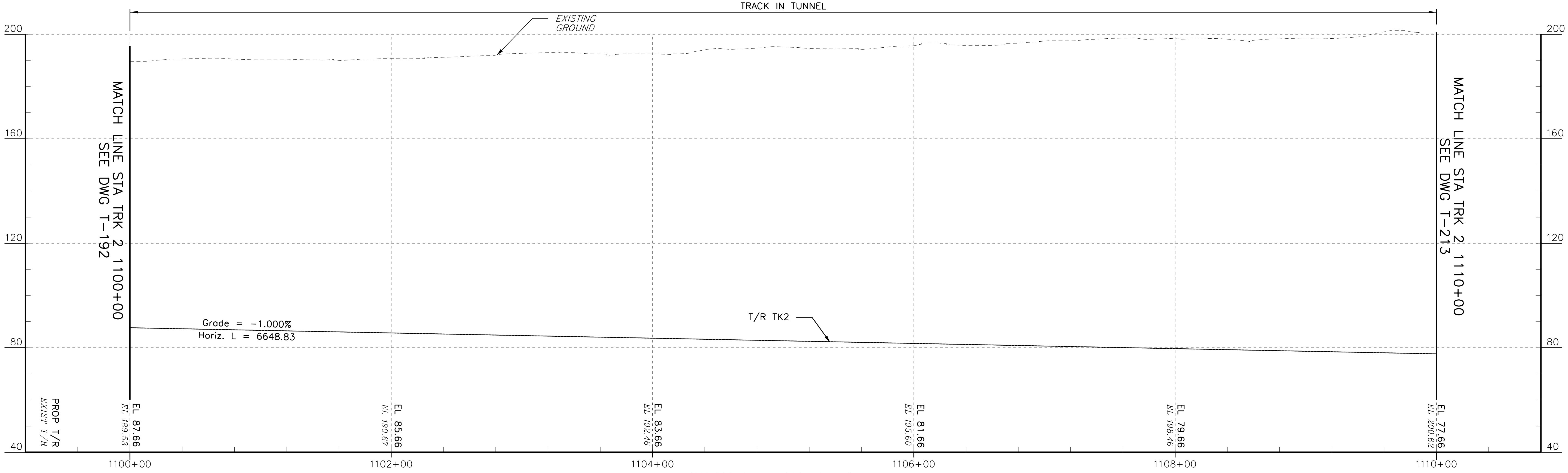
TRACK PLAN
STA TK2 1100+00 TO STA TK2 1110+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-201



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
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A Parsons Brinckerhoff/Parsons Joint Venture

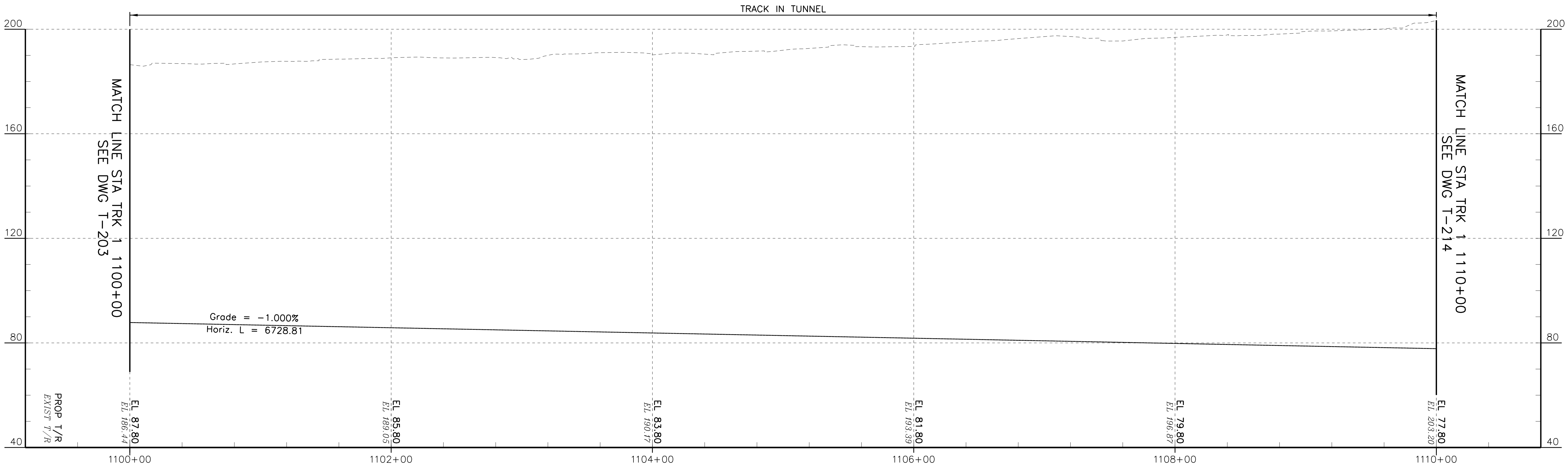
BALTIMORE, MD MPXX
B&P TUNNEL

PROFILES – TRACK 2 & TRACK 3
STA. 1100+00 TO STA. 1110+00

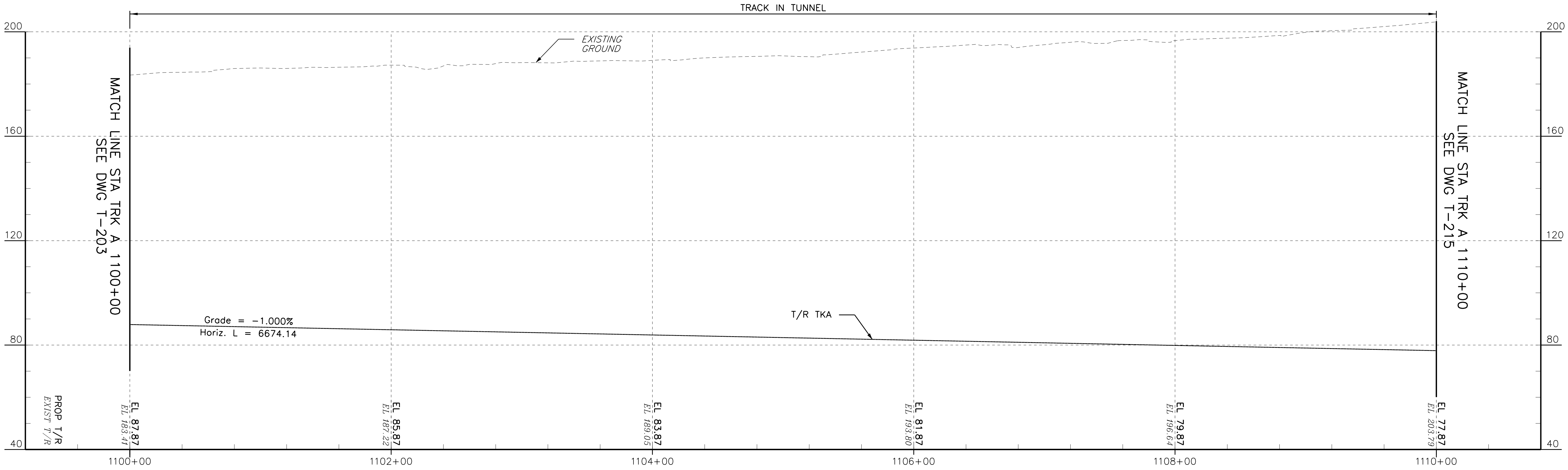
Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–202

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS

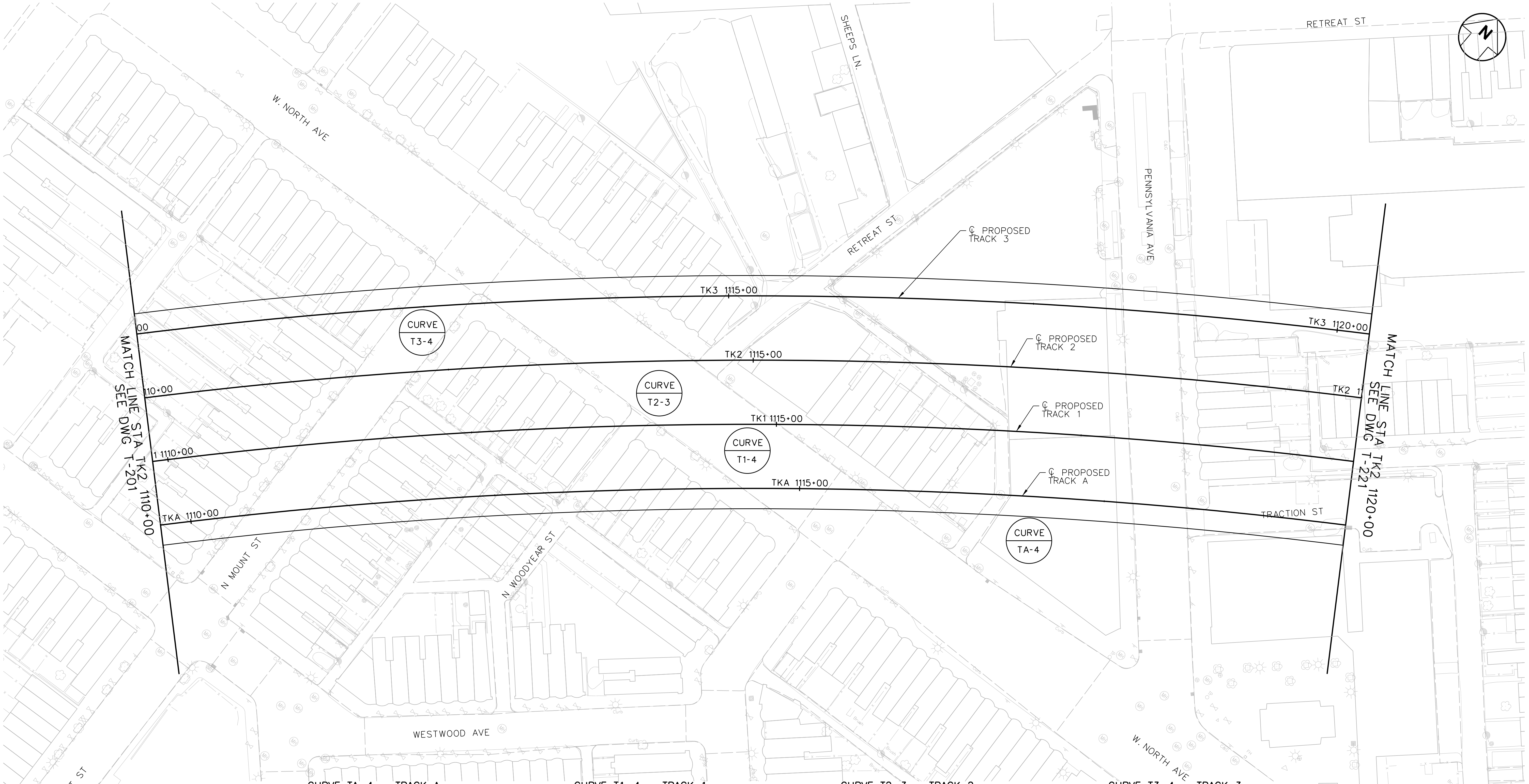
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILES – TRACK A & TRACK 1
STA. 1100+00 TO STA. 1110+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–203



CURVE TA–4 – TRACK A

D_C = 1°–27'–15.94"	Δ_I = 72°–07'–08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_s = 05°–24'–37.17"	
R = 3939.51'	Δ_C = 61°–17'–53.92"	
L_C = 4214.71'	θ_s = 05°–24'–37.17"	
T_S = 3244.63'/3244.63'	E = 639.69'	
E_a = 2.75"	M = 550.33'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	–0.21"	3.76"
V_{MPH} =	50	50
JERK RATE ENT =	–72.49	2.47
JERK RATE EXT =	–72.49	2.47

CURVE T1–4 – TRACK 1

D_C = 1°–26'–07.07"	Δ_I = 72°–07'–08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_s = 05°–20'–21.02"	
R = 3992.01'	Δ_C = 61°–26'–26.22"	
L_C = 4280.80'	θ_s = 05°–20'–21.02"	
T_S = 3282.80'/3282.80'	E = 651.64'	
E_a = 5.50"	M = 560.19'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	–2.99"	4.55"
V_{MPH} =	50	100
JERK RATE ENT =	–4.98	1.64
JERK RATE EXT =	–4.98	1.64

CURVE T2–3 – TRACK 2

D_C = 1°–25'–00.00"	Δ_I = 72°–07'–08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_s = 05°–16'–11.52"	
R = 4044.51'	Δ_C = 61°–34'–45.22"	
L_C = 4346.88'	θ_s = 05°–16'–11.52"	
T_S = 3320.98'/3320.98'	E = 663.59'	
E_a = 5.50"	M = 570.06'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	–3.02"	4.41"
V_{MPH} =	50	100
JERK RATE ENT =	–4.92	1.69
JERK RATE EXT =	–4.92	1.69

CURVE T3–4 – TRACK 3

D_C = 1°–23'–55.26"	Δ_I = 72°–07'–08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_s = 05°–12'–10.70"	
R = 4096.51'	Δ_C = 61°–42'–46.86"	
L_C = 4412.33'	θ_s = 05°–12'–10.70"	
T_S = 3358.79'/3358.79'	E = 675.45'	
E_a = 2.50"	M = 579.84'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	–0.05"	2.30"
V_{MPH} =	50	50
JERK RATE ENT =	–281.84	4.63
JERK RATE EXT =	–281.84	4.63

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved
Date

WORK IN PROGRESS

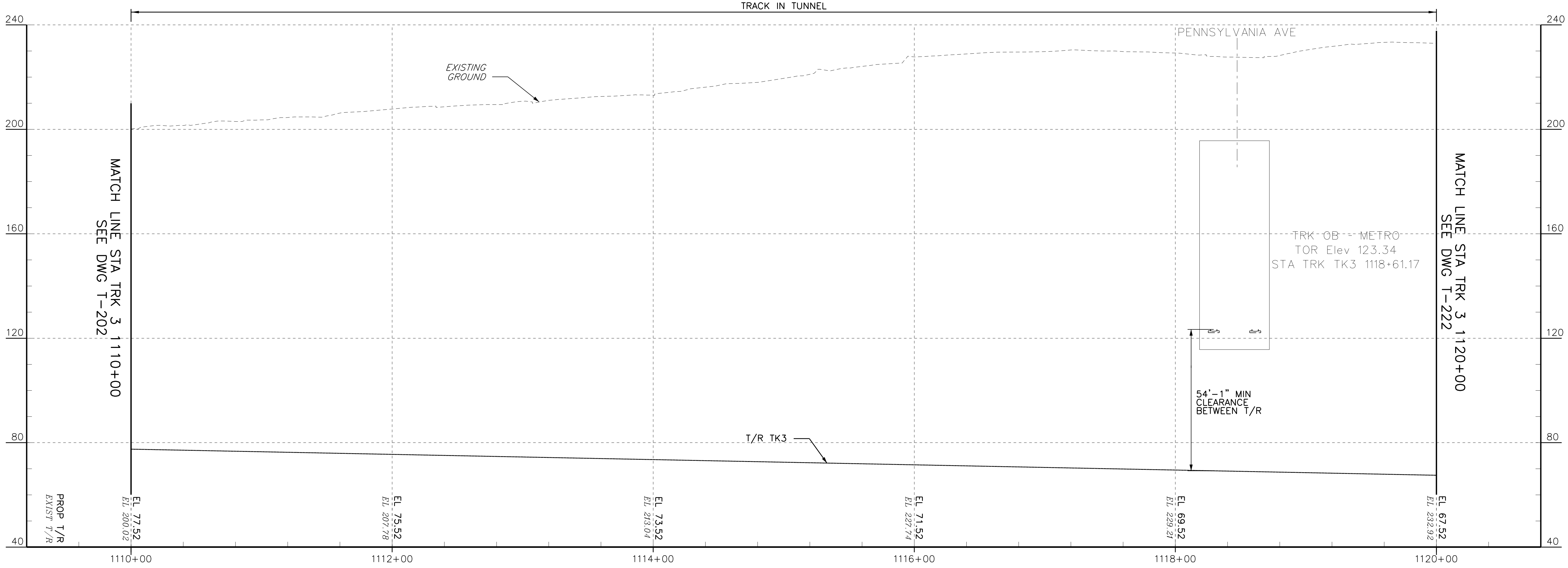
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

TRACK PLAN
STA TK2 1110+00 TO STA TK2 1120+00

Designed XXX
Drawn XXX
Checked XXX
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–211



PROFILE – TRACK 3

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved
Date
WORK IN PROGRESS

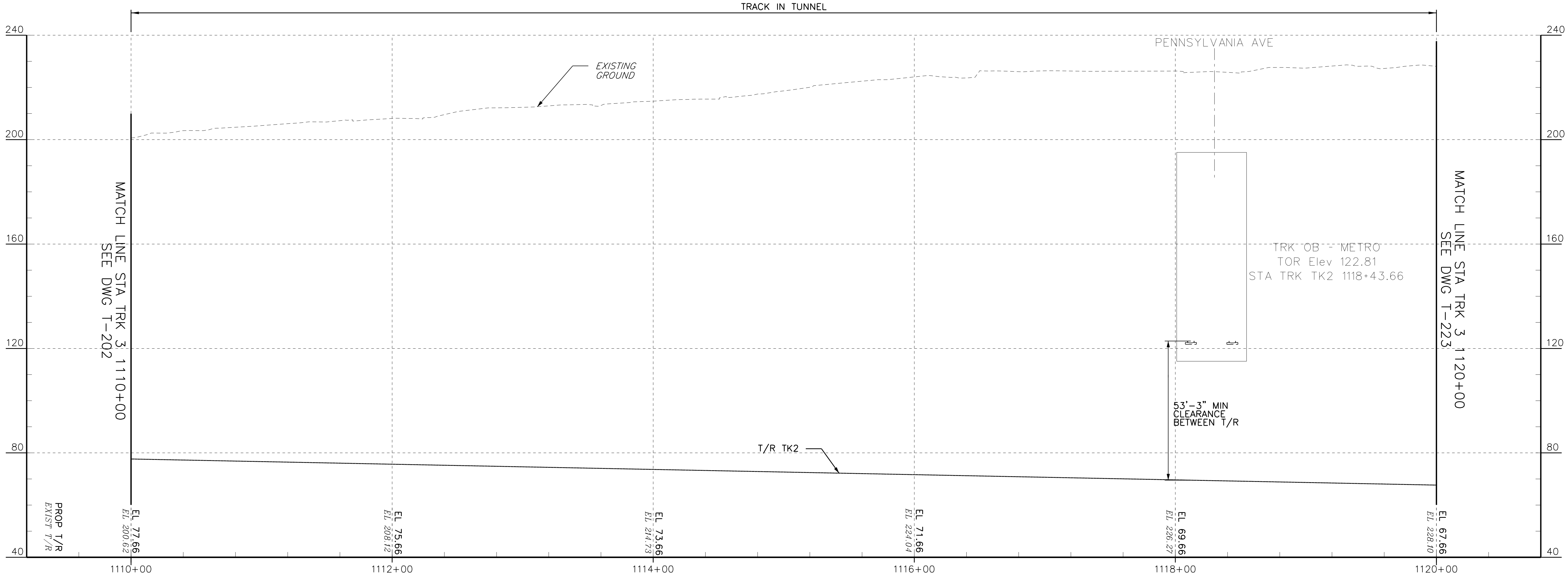
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK 3
STA. 1110+00 TO STA. 1120+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–212



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

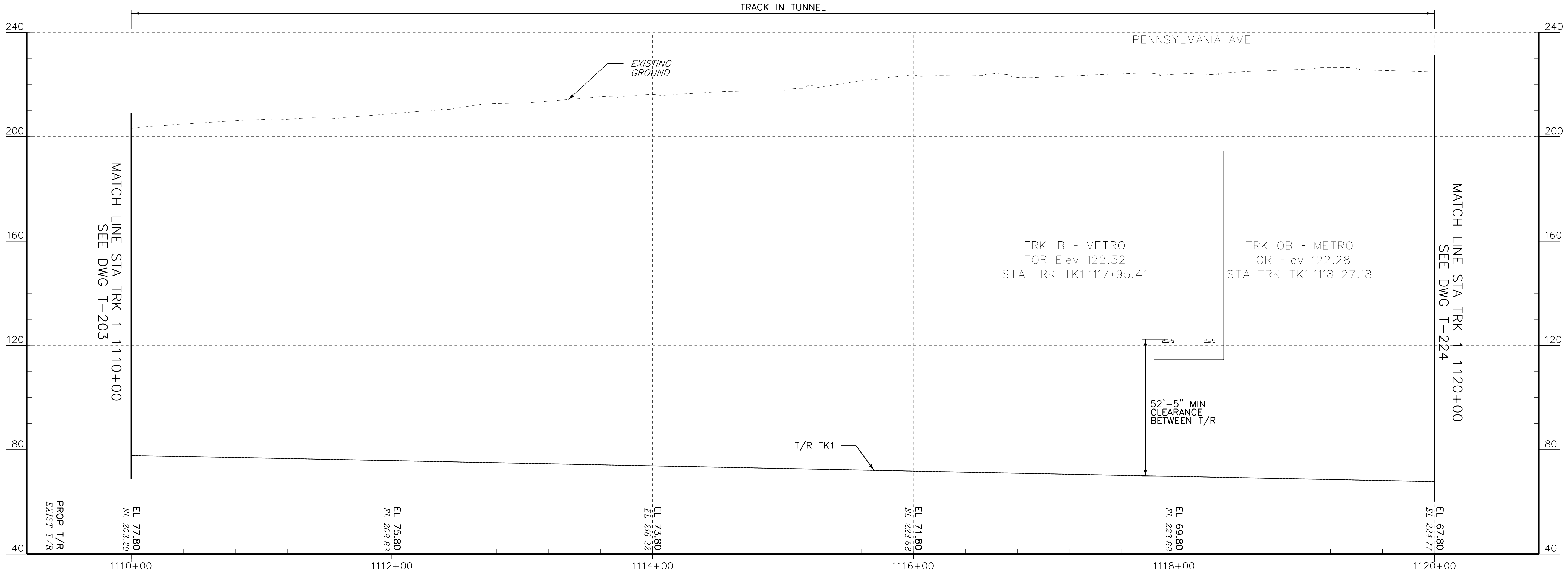
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK 2
STA. 1110+00 TO STA. 1120+00

Designed	Drawn	Checked	Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-213



PROFILE – TRACK 1

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

AMTRAK®

Office of Engineering
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

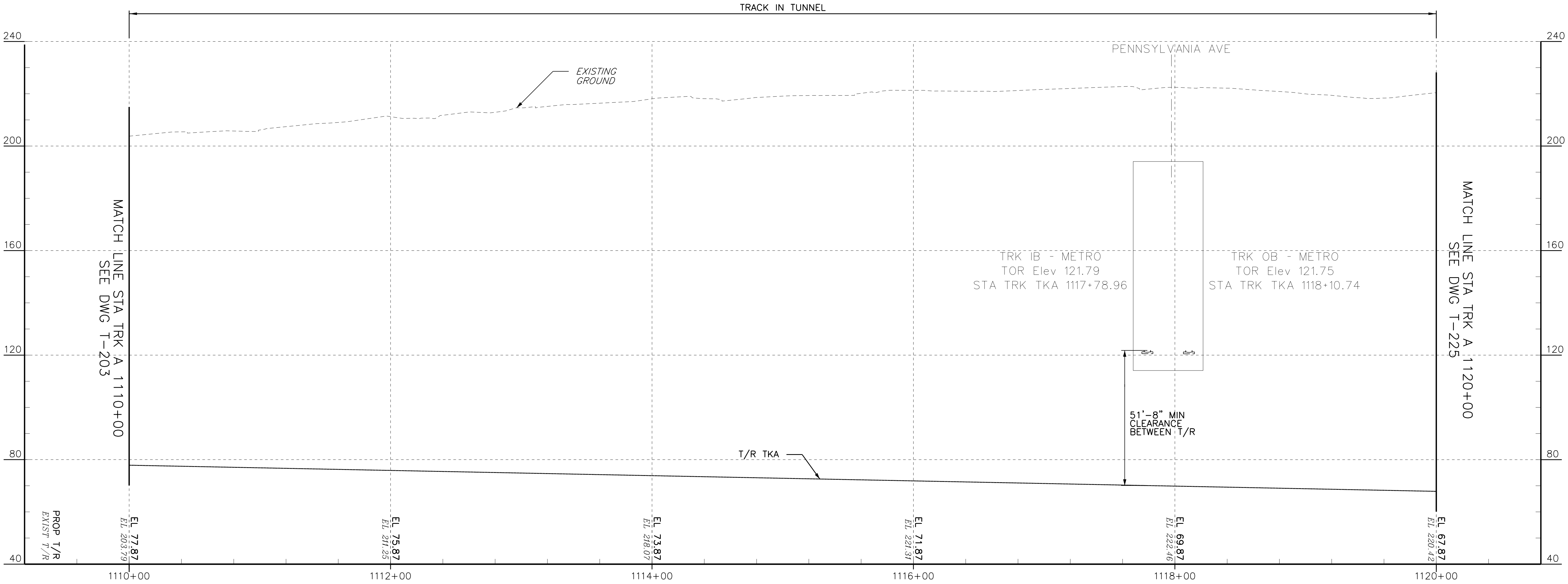
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK 1
STA. 1110+00 TO STA. 1120+00

Designed
Drawn
Checked
Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–214



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

No.	Revisions	Date	By

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS

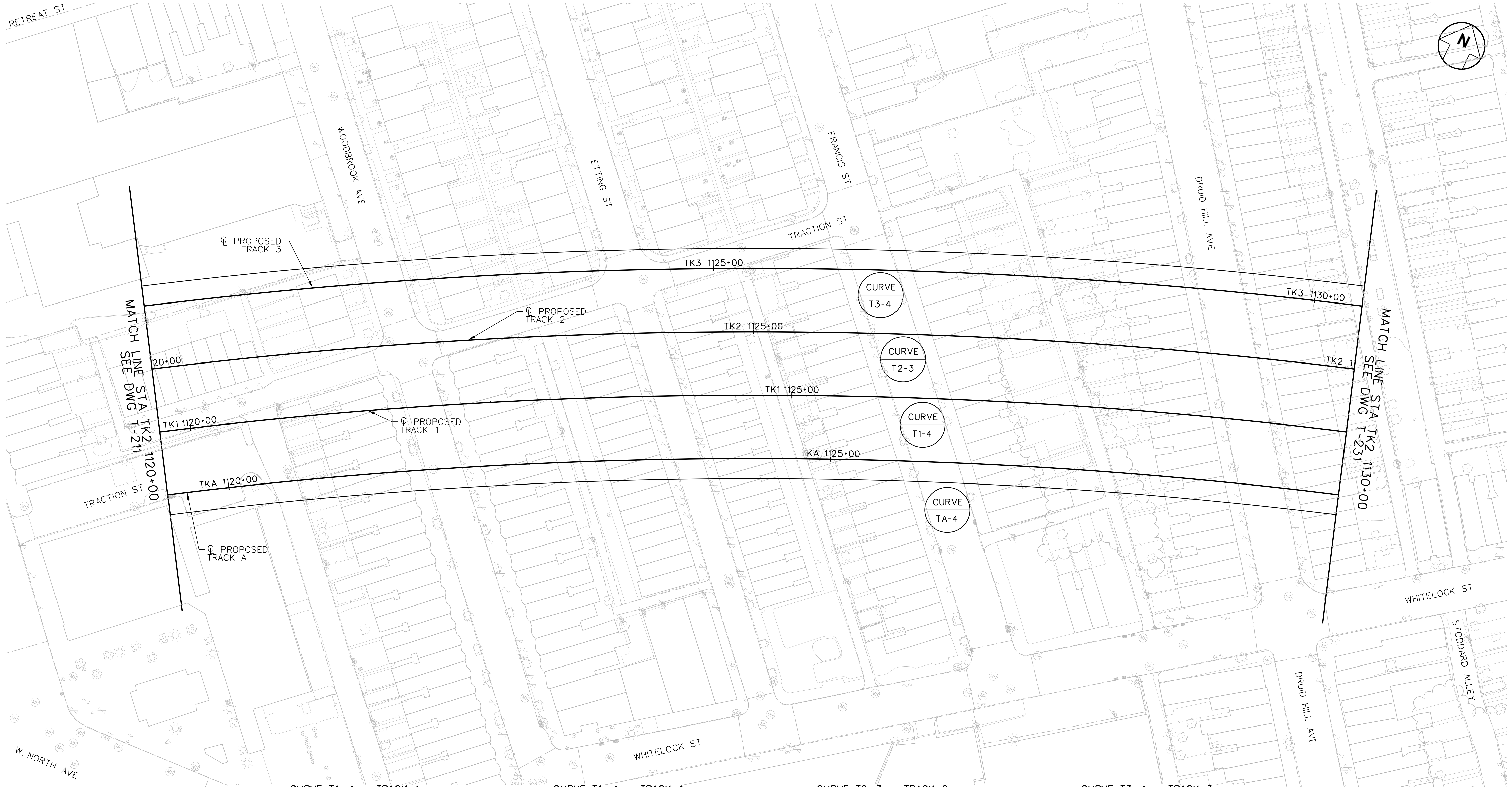
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK A
STA. 1110+00 TO STA. 1120+00

Designed | Drawn | Checked | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-215



CURVE TA-4 – TRACK A

D_C = 1°-27'-15.94"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-24'-37.17"	
R = 3939.51'	Δ_C = 61°-17'-53.92"	
L_C = 4214.71'	θ_S = 05°-24'-37.17"	
T_S = 3244.63'/3244.63'	E = 639.69'	
E_a = 2.75"	M = 550.33'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-0.21"	3.76"
V_{MPH} =	50	50
JERK RATE ENT =	-72.49	2.47
JERK RATE EXT =	-72.49	2.47

CURVE T1-4 – TRACK 1

D_C = 1°-26'-07.07"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-20'-21.02"	
R = 3992.01'	Δ_C = 61°-26'-26.22"	
L_C = 4280.80'	θ_S = 05°-20'-21.02"	
T_S = 3282.80'/3282.80'	E = 651.64'	
E_a = 5.50"	M = 560.19'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-2.99"	4.55"
V_{MPH} =	50	100
JERK RATE ENT =	-4.98	1.64
JERK RATE EXT =	-4.98	1.64

CURVE T2-3 – TRACK 2

D_C = 1°-25'-00.00"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-16'-11.52"	
R = 4044.51'	Δ_C = 61°-34'-45.22"	
L_C = 4346.88'	θ_S = 05°-16'-11.52"	
T_S = 3320.98'/3320.98'	E = 663.59'	
E_a = 5.50"	M = 570.06'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-3.02"	4.41"
V_{MPH} =	50	100
JERK RATE ENT =	-4.92	1.69
JERK RATE EXT =	-4.92	1.69

CURVE T3-4 – TRACK 3

D_C = 1°-23'-55.26"	Δ_I = 72°-07'-08.26"	
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-12'-10.70"	
R = 4096.51'	Δ_C = 61°-42'-46.86"	
L_C = 4412.33'	θ_S = 05°-12'-10.70"	
T_S = 3358.79'/3358.79'	E = 675.45'	
E_a = 2.50"	M = 579.84'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-0.05"	2.30"
V_{MPH} =	50	50
JERK RATE ENT =	-281.84	4.63
JERK RATE EXT =	-281.84	4.63

0 20 40
SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved Date

WORK IN PROGRESS

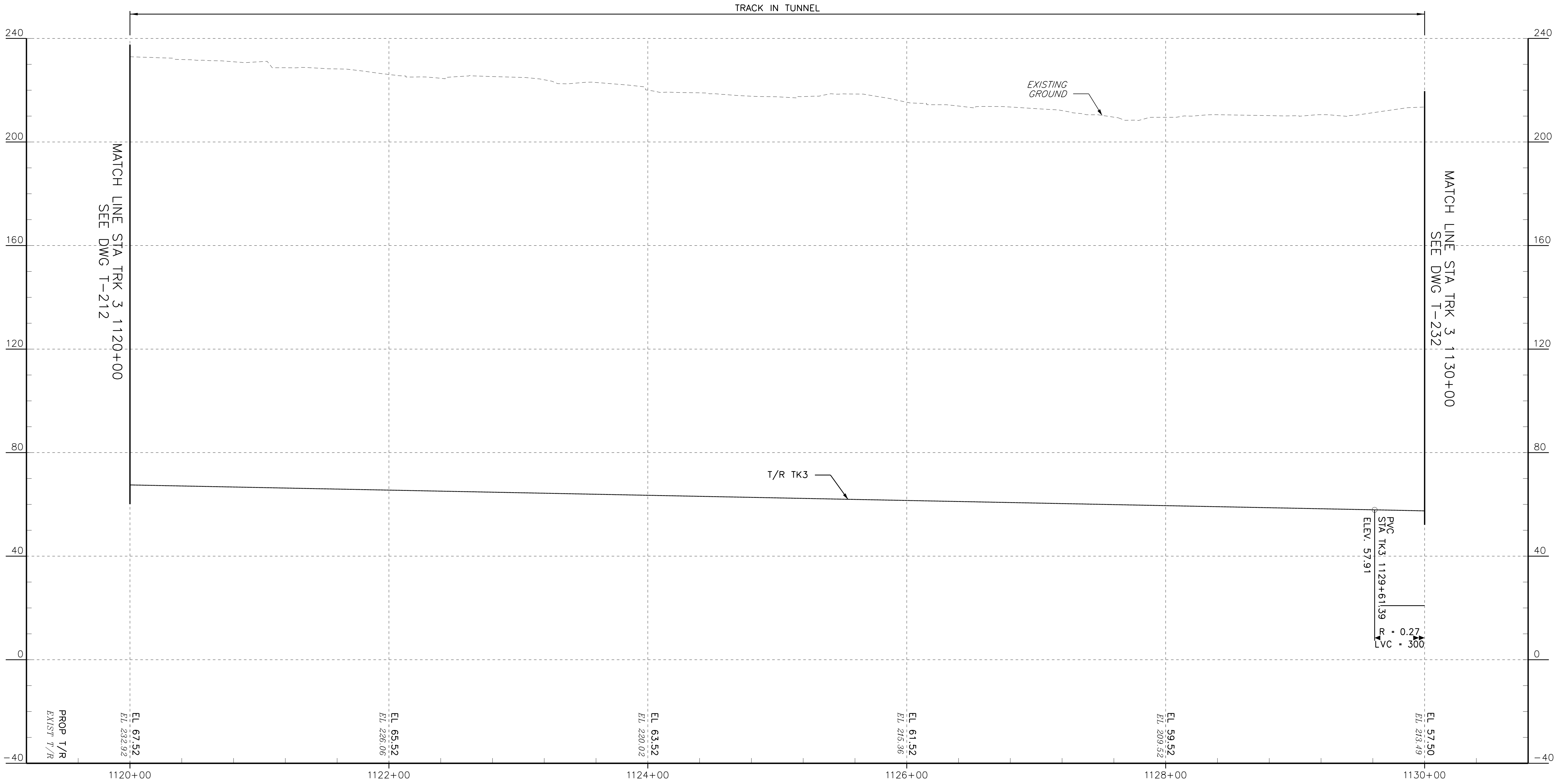
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

TRACK PLAN
STA TK2 1120+00 TO STA TK2 1130+00

Designed
Drawn
Checked
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-221



PROFILE – TRACK 3

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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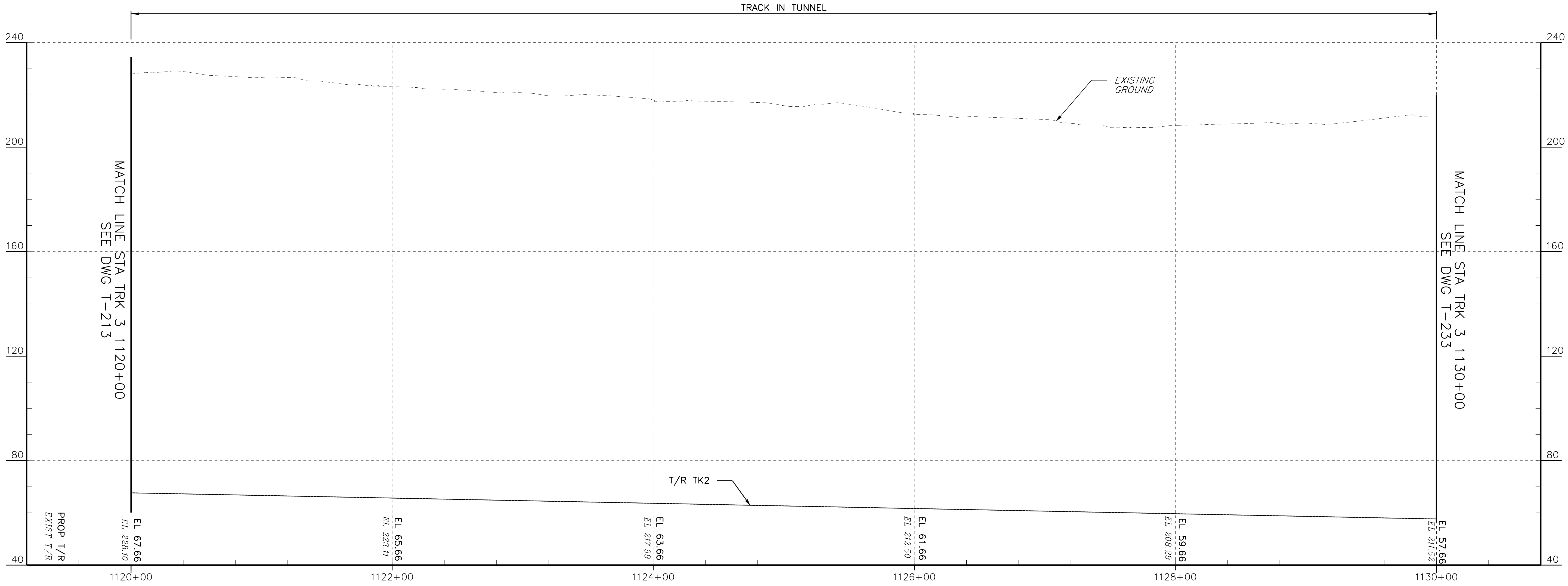
B&P TUNNEL

PROFILE – TRACK 3
STA. 1120+00 TO STA. 1130+00

Designed
Drawn
Checked
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-222



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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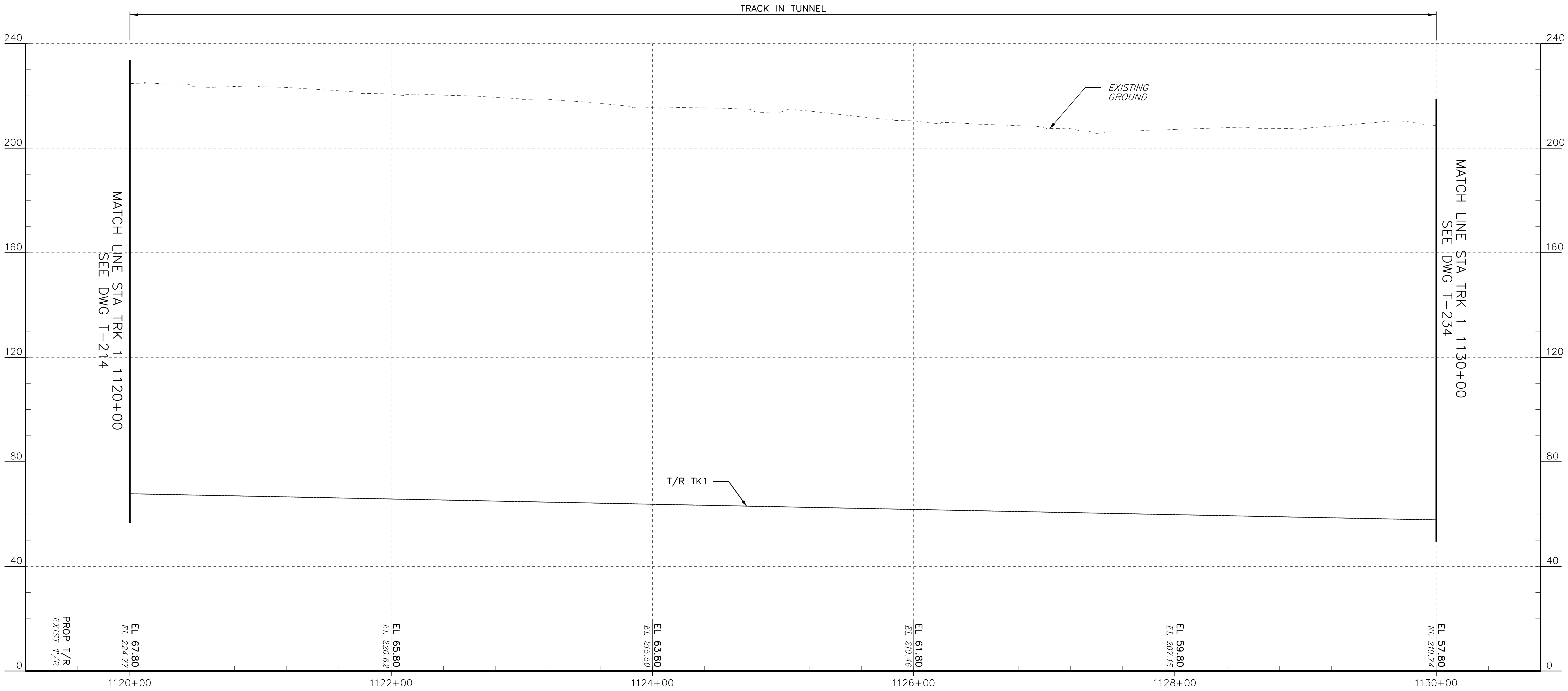
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK 2
STA. 1120+00 TO STA. 1130+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–223



PROFILE – TRACK 1

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
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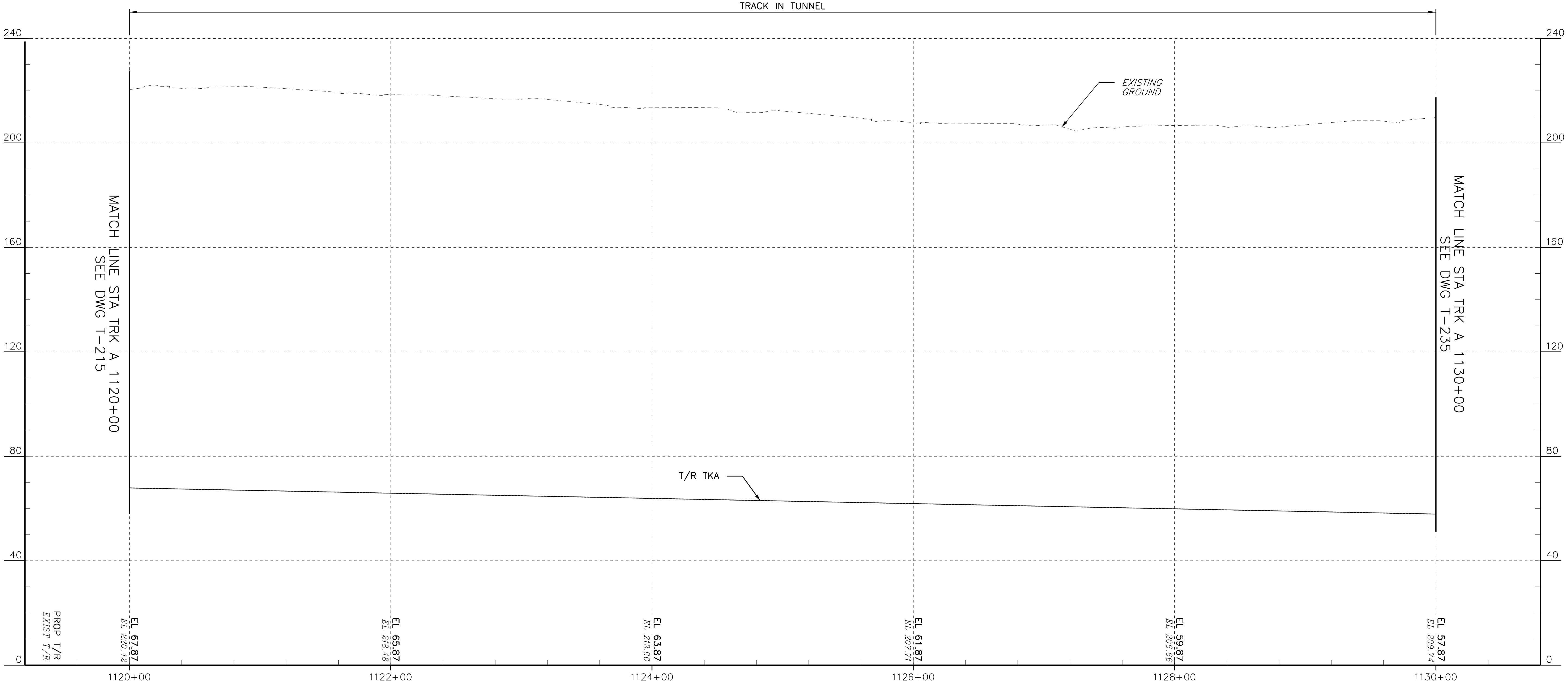
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK 1
STA. 1120+00 TO STA. 1130+00

Designed	DO	Drawn	JB	Checked	FB	Date	09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–224



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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30th Street Station, Philadelphia, Pennsylvania 19104

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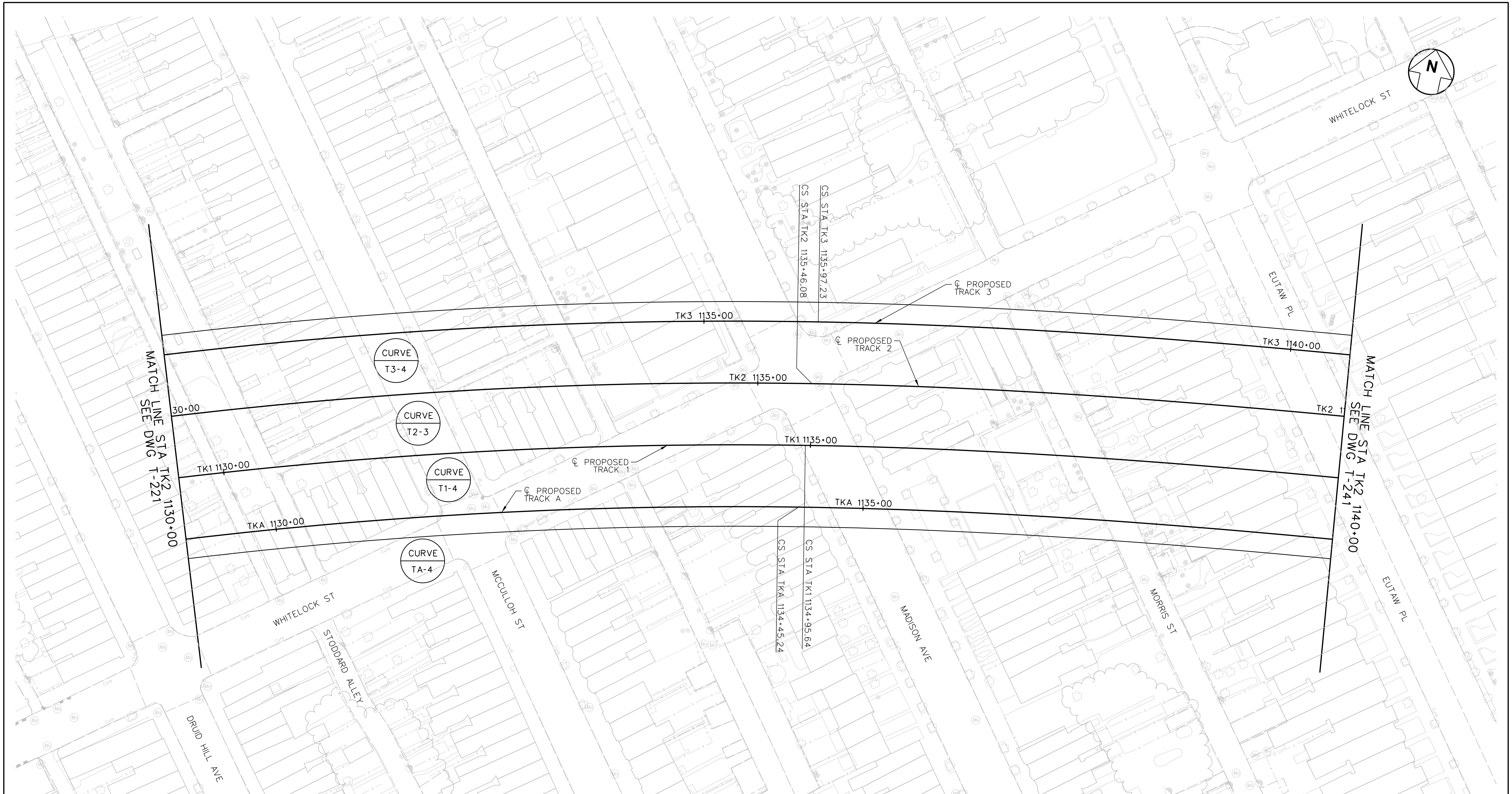
PROFILE – TRACK A
STA. 1120+00 TO STA. 1130+00

Designed DO Drawn JB Checked FB Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–225



CURVE TA-4 – TRACK A

D_C = 1°-27'-15.94"	Δ_I = 72°-07'-08.26"
L_{sa}/L_{sb} = 744.00'/7442.00'	θ_S = 05°-24'-37.17"
R = 3939.51'	Δ_C = 61°-17'-53.92"
L_C = 4214.71'	θ_S = 05°-24'-37.17"
T_S = 3244.63'/3244.63'	E = 639.69'
E_a = 2.75"	M = 550.33'

EQUIPMENT TYPE –		FREIGHT	PASSENGER
E_U	=	-0.21"	3.76"
V_{MPH}	=	50	50
JERK RATE ENT	=	-72.49	2.47
JERK RATE EXT	=	-72.49	2.47

CURVE T1-4 – TRACK 1

D_C = 1°-26'-07.07"	Δ_I = 72°-07'-08.26"
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-20'-21.02"
R = 3992.01'	Δ_C = 61°-26'-26.22"
L_C = 4280.80'	θ_S = 05°-20'-21.02"
T_S = 3282.80'/3282.80'	E = 651.64'
E_a = 5.50"	M = 560.19'

EQUIPMENT TYPE –		FREIGHT	PASSENGER
E_U	=	-2.99"	4.55"
V_{MPH}	=	50	100
JERK RATE ENT	=	-4.98	1.64
JERK RATE EXT	=	-4.98	1.64

CURVE T2-3 – TRACK 2

D_C = 1°-25'-00.00"	Δ_I = 72°-07'-08.26"
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-16'-11.52"
R = 4044.51'	Δ_C = 61°-34'-45.22"
L_C = 4346.88'	θ_S = 05°-16'-11.52"
T_S = 3320.98'/3320.98'	E = 663.59'
E_a = 5.50"	M = 570.06'

EQUIPMENT TYPE –		FREIGHT	PASSENGER
E_U	=	-3.02"	4.41"
V_{MPH}	=	50	100
JERK RATE ENT	=	-4.92	1.69
JERK RATE EXT	=	-4.92	1.69

CURVE T3-4 – TRACK 3

D_C = 1°-23'-55.26"	Δ_I = 72°-07'-08.26"
L_{sa}/L_{sb} = 744.00'/744.00'	θ_S = 05°-12'-10.70"
R = 4096.51'	Δ_C = 61°-42'-46.86"
L_C = 4412.33'	θ_S = 05°-12'-10.70"
T_S = 3358.79'/3358.79'	E = 675.45'
E_a = 2.50"	M = 579.84'

EQUIPMENT TYPE –		FREIGHT	PASSENGER
E_U	=	-0.05"	2.30"
V_{MPH}	=	50	50
JERK RATE ENT	=	-281.84	4.63
JERK RATE EXT	=	-281.84	4.63

0 20 40
SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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WORK IN PROGRESS

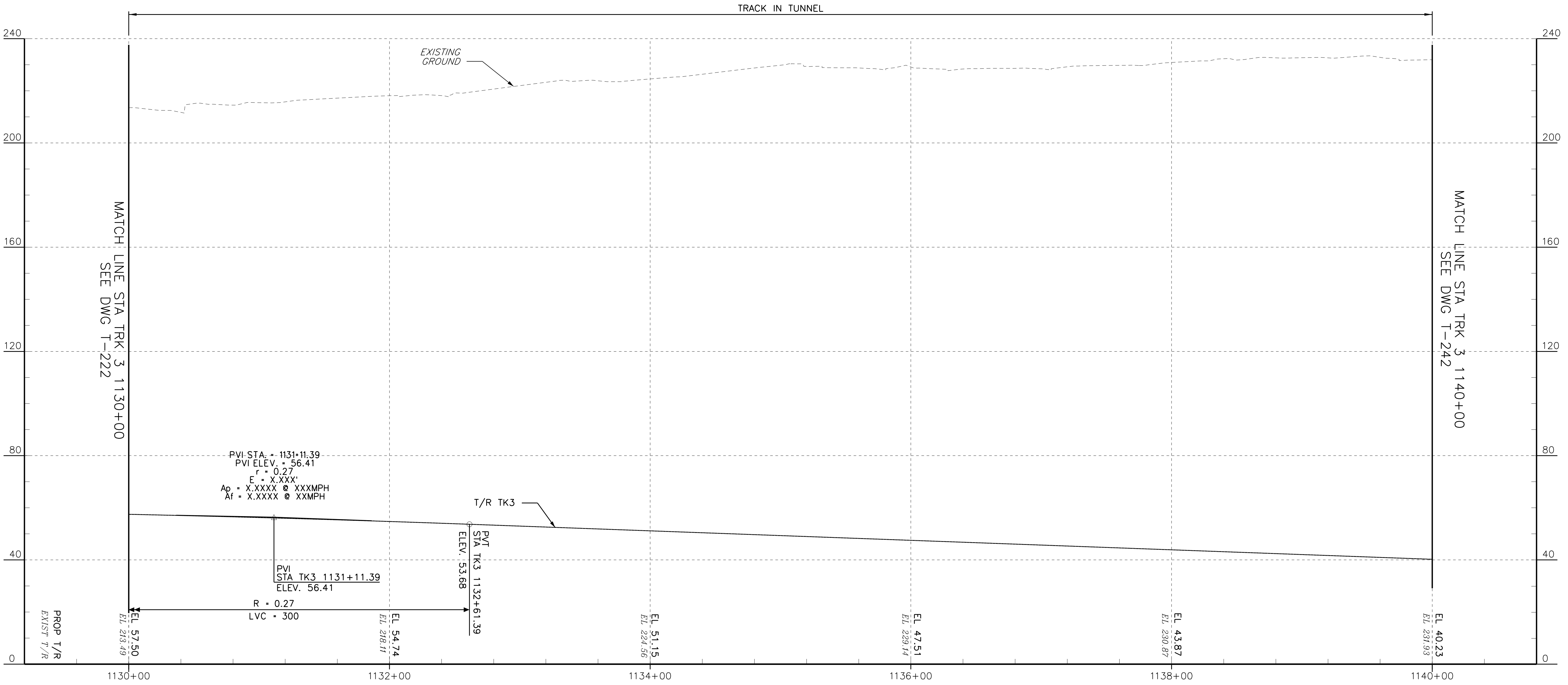
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD
B&P TUNNEL
MPXX

TRACK PLAN
STA TK2 1130+00 TO STA TK2 1140+00

Designed | Drawn | Checked | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-231



PROFILE – TRACK 3

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved Date

WORK IN PROGRESS

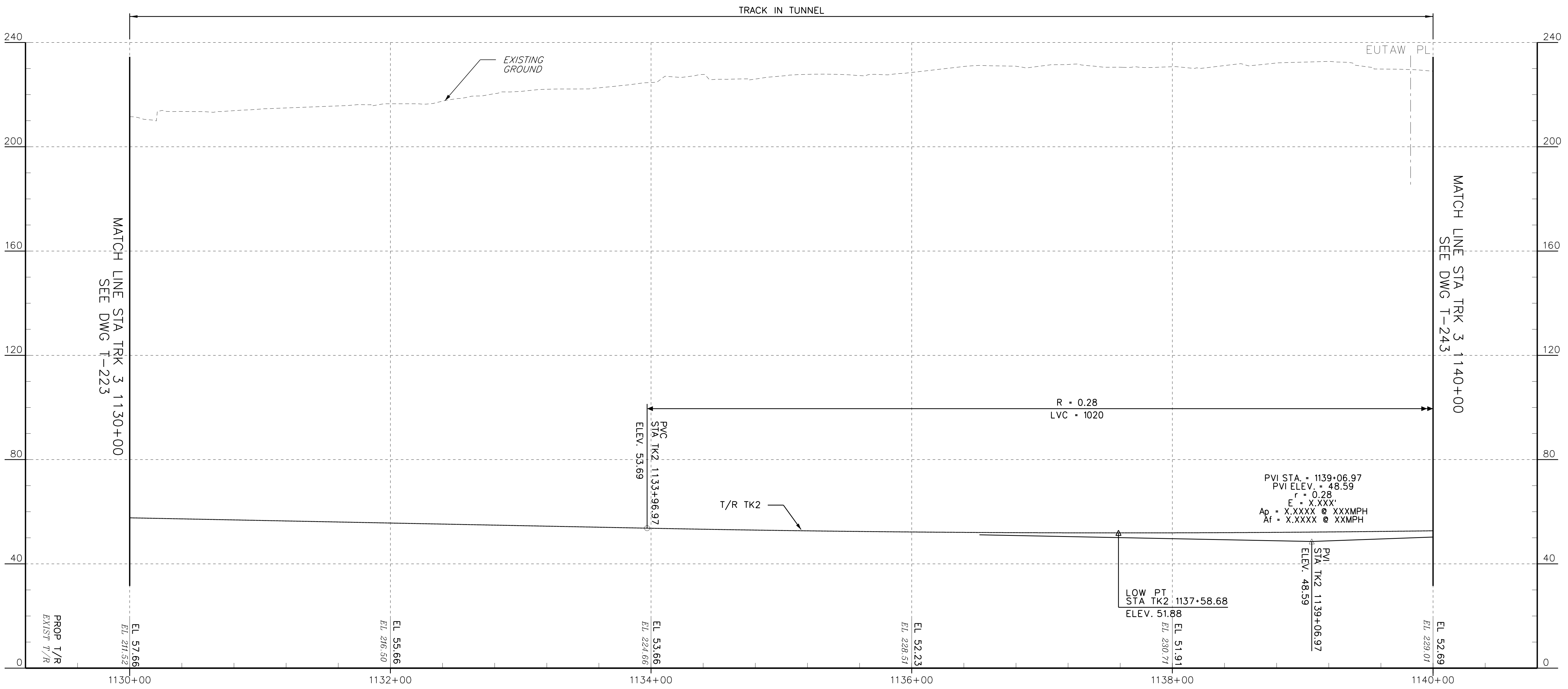
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK 3
STA. 1130+00 TO STA. 1140+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-232



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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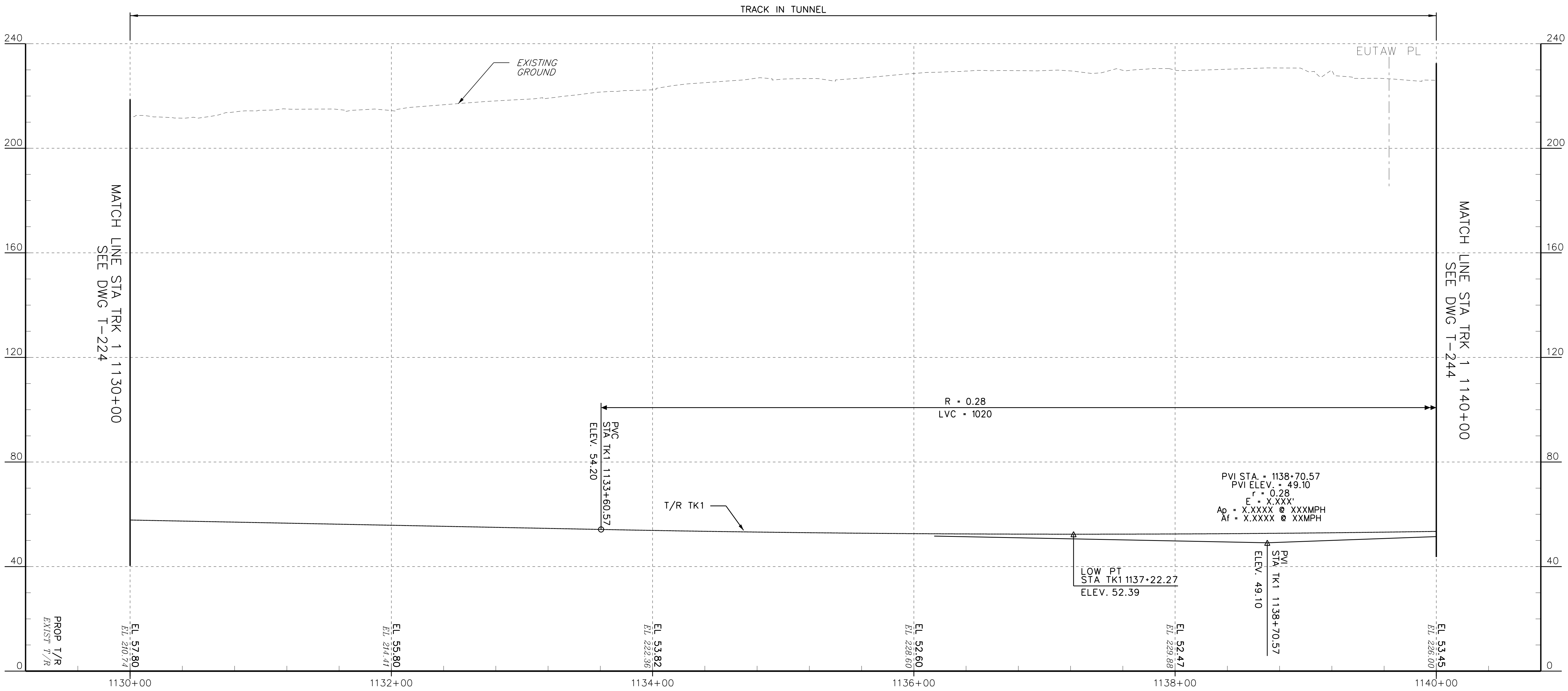
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK 2
STA. 1130+00 TO STA. 1140+00

Designed	DO	Drawn	JB	Checked	FB	Date	09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–233



PROFILE – TRACK 1

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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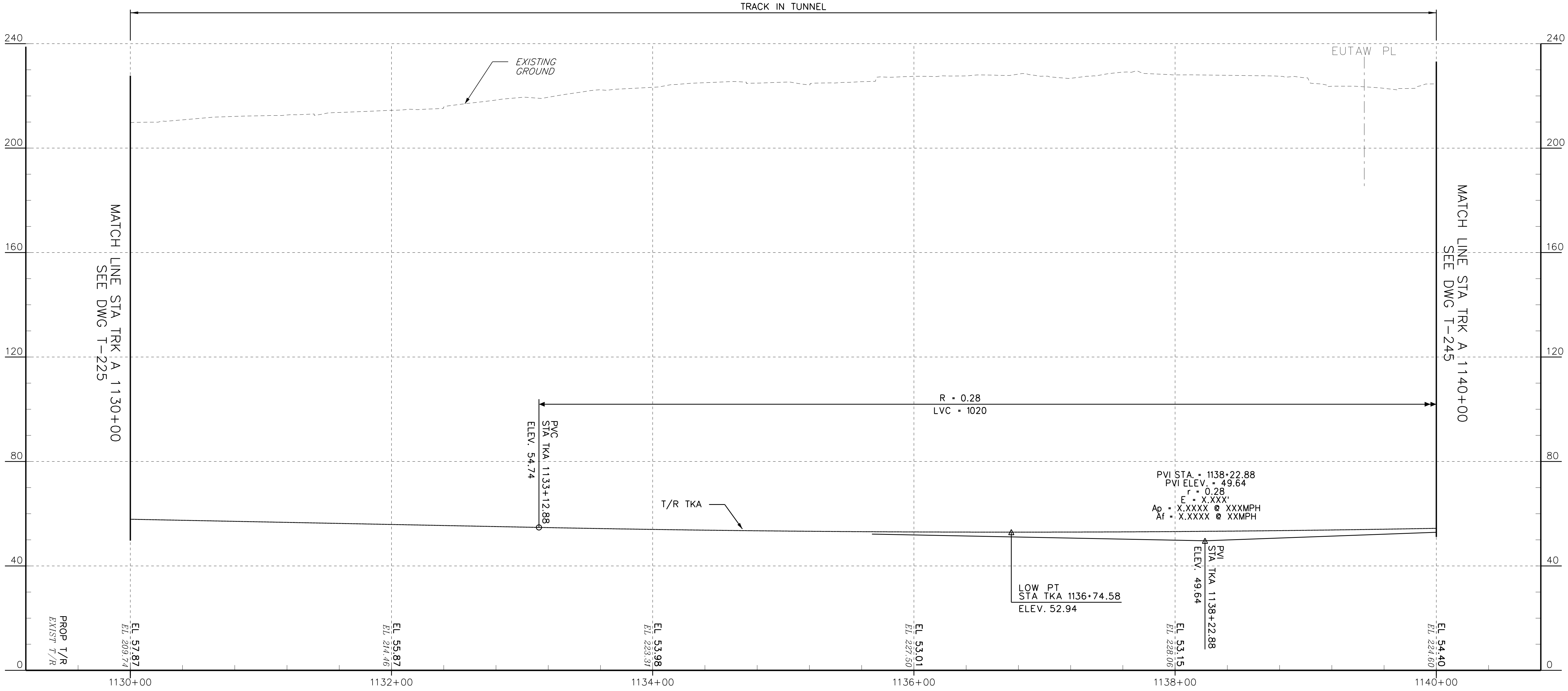
B&P TUNNEL
MPXX

PROFILE – TRACK 1
STA. 1130+00 TO STA. 1140+00

Designed	DO	Drawn	JB
Checked	FB	Date	09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–234



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

AMTRAK®

Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved Date

WORK IN PROGRESS

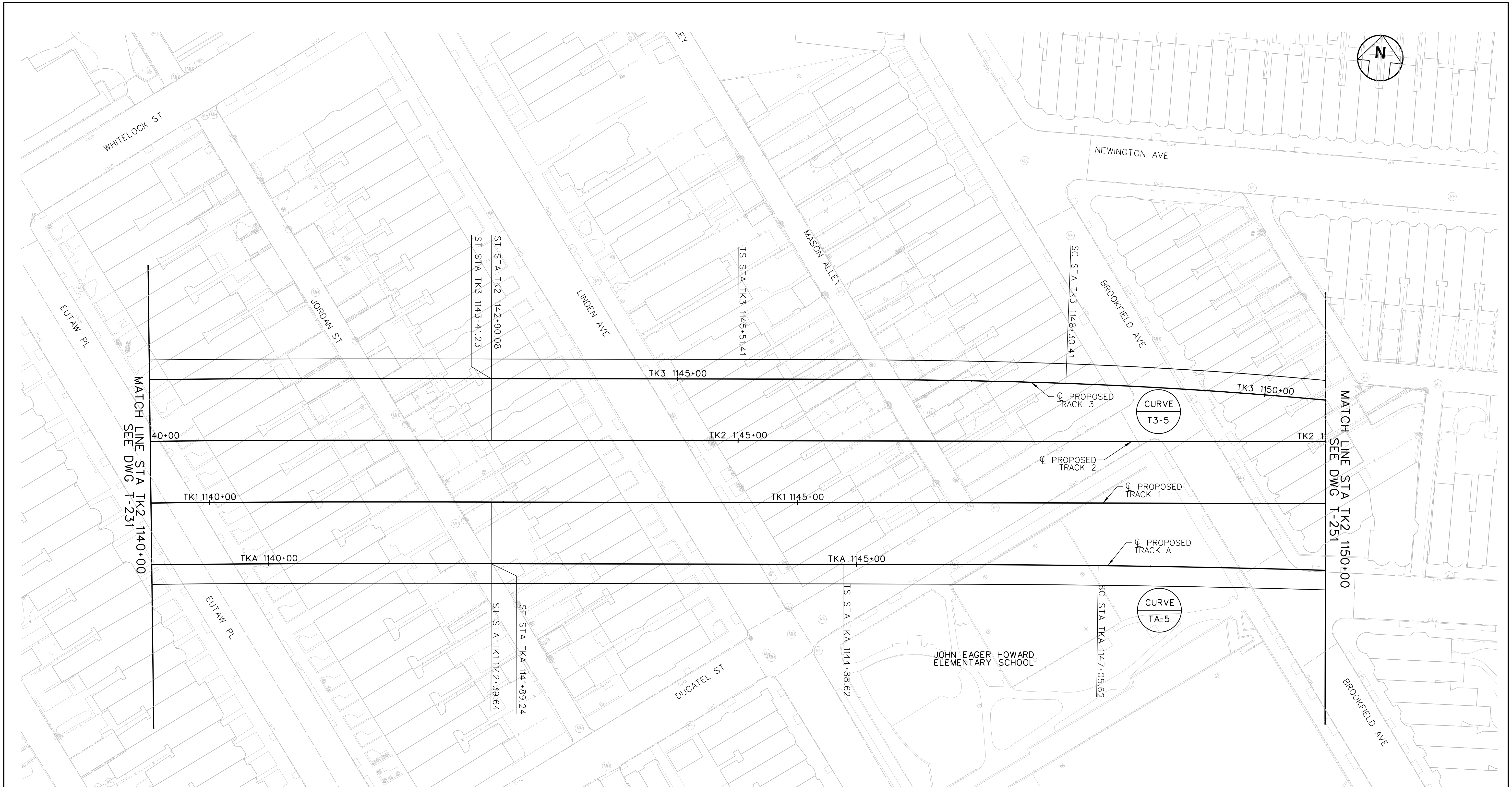
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK A
STA. 1130+00 TO STA. 1140+00

Designed DO Drawn JB Checked FB Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–235



CURVE TA-5 – TRACK A

D_C = 0°–32'–00.00"	Δ_I = 02°–55'–36.47"	
L_{sa}/L_{sb} = 217.00'/217.00'	θ_s = 00°–34'–43.19"	
R = 10743.00'	Δ_C = 01°–46'–10.08"	
L_C = 331.78'	θ_s = 00°–34'–43.19"	
T_S = 382.95'/382.95'	E = 1.28'	
E_a = 0.75"	M = 1.28'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	–0.01"	1.64"
V_{MPH} =	45	45
JERK RATE ENT =	822.28	1.66
JERK RATE EXT =	822.28	1.66

CURVE T3-5 – TRACK 3

D_C = 1°–26'–00.00"	Δ_I = 08°–21'–40.17"	
L_{sa}/L_{sb} = 279.00'/279.00'	θ_s = 01°–59'–58.01"	
R = 3997.48'	Δ_C = 04°–21'–44.14"	
L_C = 304.35'	θ_s = 01°–59'–58.01"	
T_S = 431.75'/431.75'	E = 2.90'	
E_a = 2.50"	M = 2.90'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	–0.01"	2.42"
V_{MPH} =	50	50
JERK RATE ENT =	712.89	1.65
JERK RATE EXT =	712.89	1.65

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved
Date
WORK IN PROGRESS

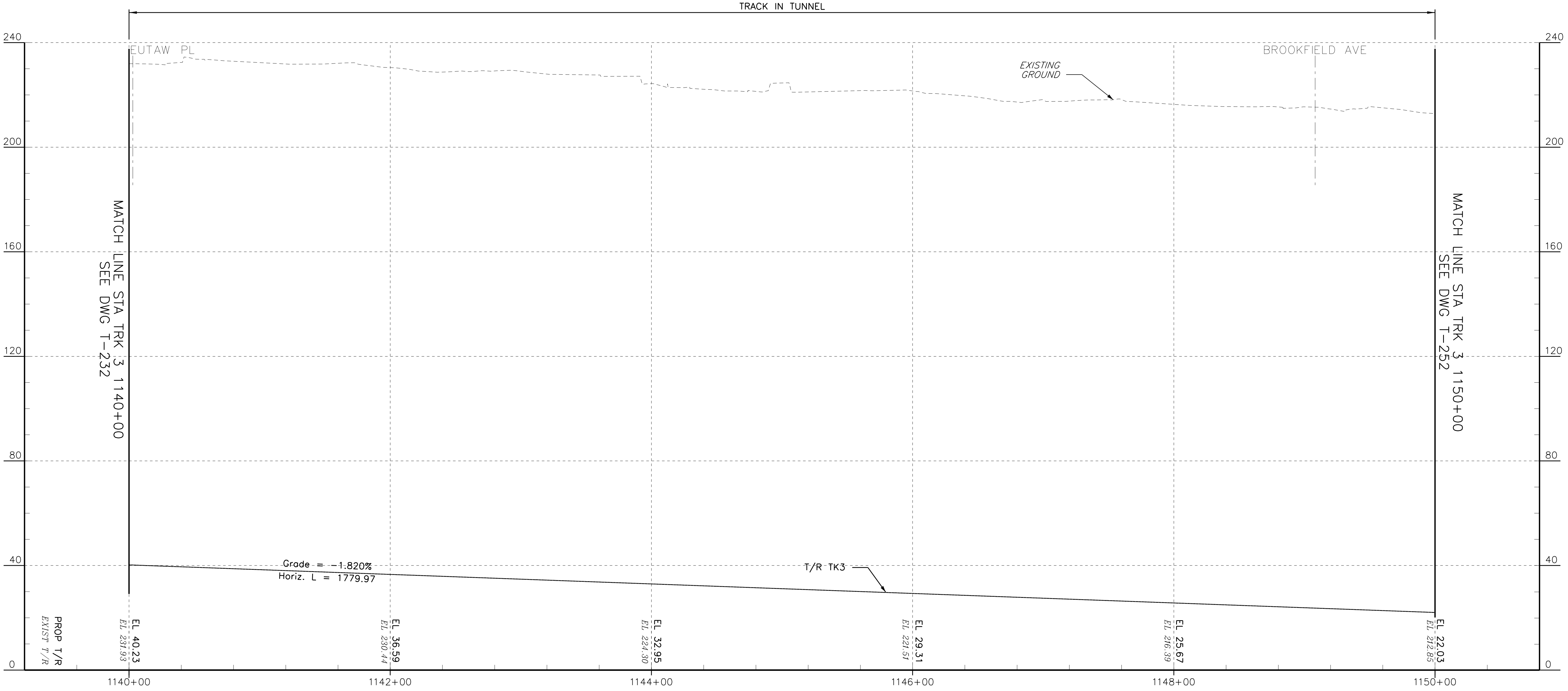
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD
B&P TUNNEL
MPXX

TRACK PLAN
STA TK2 1140+00 TO STA TK2 1150+00

Designed
Drawn
Checked
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–241



PROFILE – TRACK 3

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved | Date

WORK IN PROGRESS

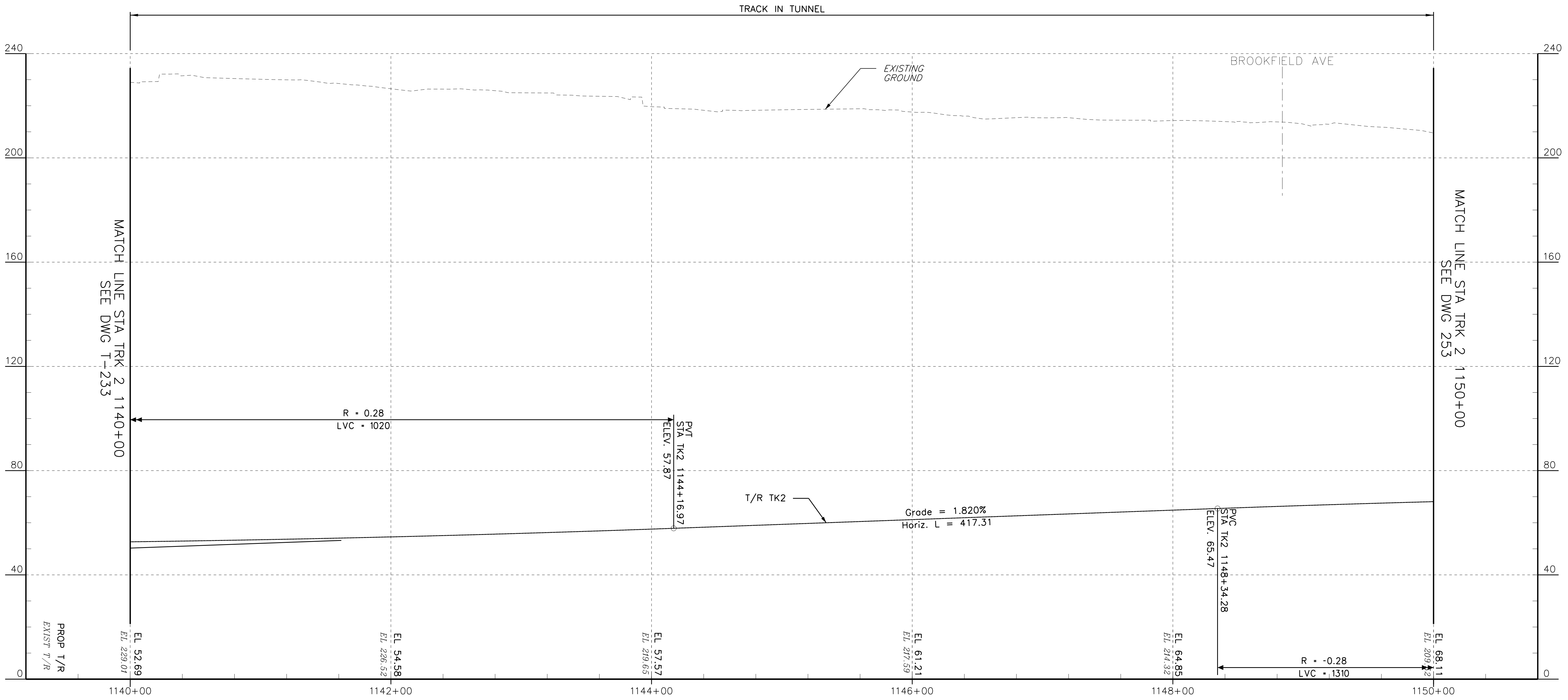
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK 3
STA. 1140+00 TO STA. 1150+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-242



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

AMTRAK®

Office of Engineering
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

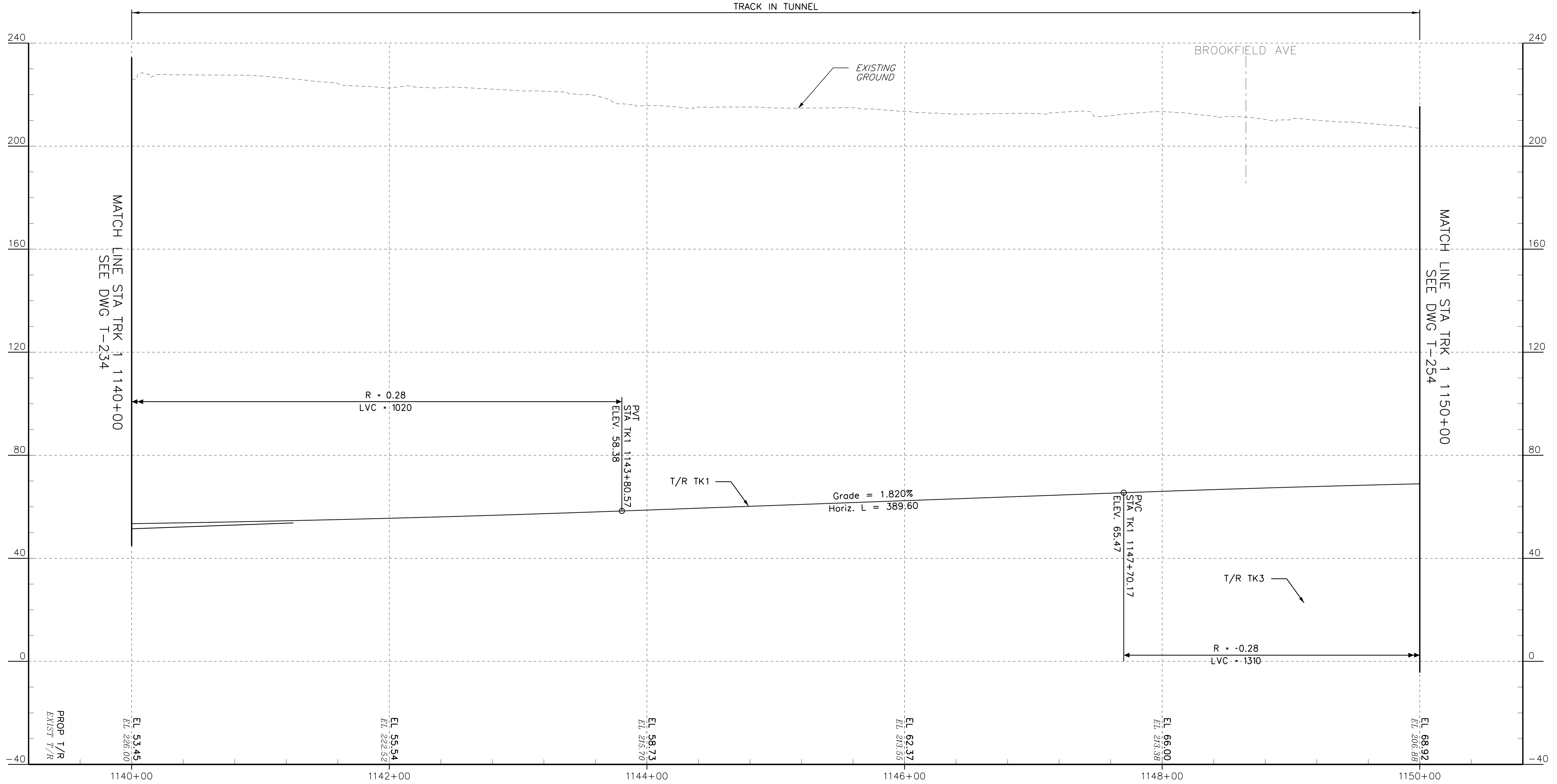
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK 2
STA. 1140+00 TO STA. 1150+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-243



PROFILE – TRACK 1

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

AMTRAK®

Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved | Date

WORK IN PROGRESS

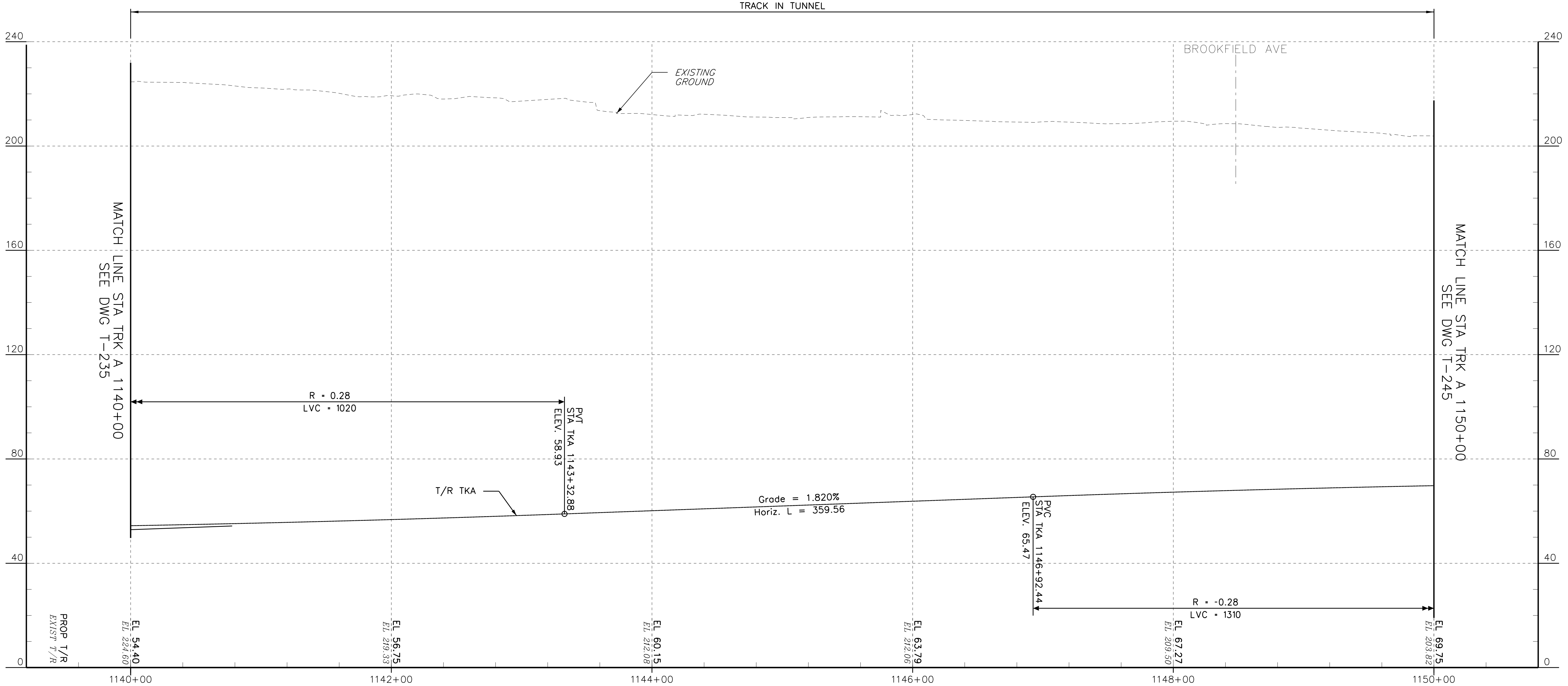
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD
B&P TUNNEL
MPXX

PROFILE – TRACK 1
STA. 1140+00 TO STA. 1150+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-244



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

A Parsons Brinckerhoff/Parsons Joint Venture

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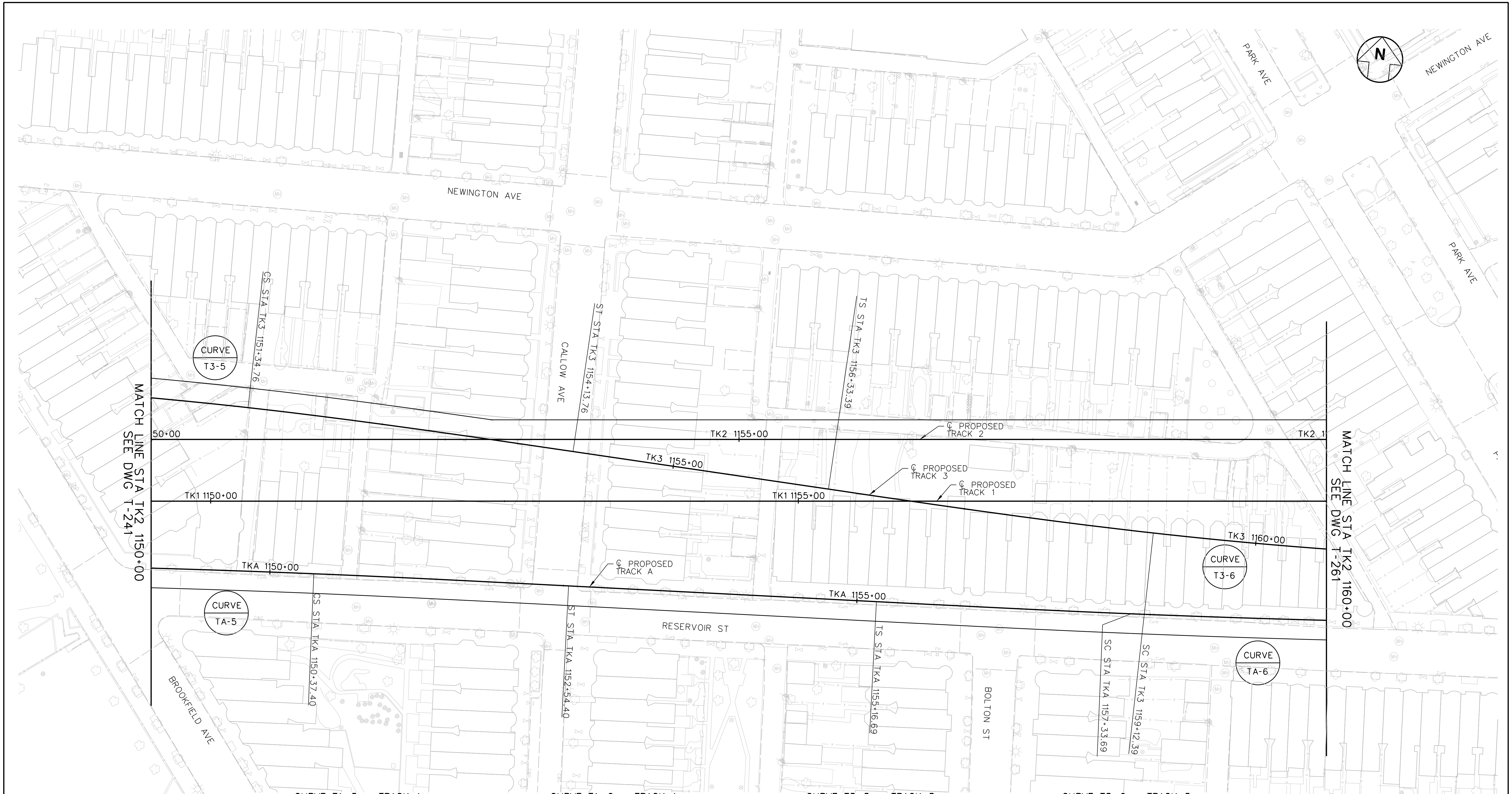
B&P TUNNEL
MPXX

PROFILE – TRACK A
STA. 1140+00 TO STA. 1150+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–245



CURVE TA–5 – TRACK A

D_C = 0°–32'–00.00"	Δ_I = 02°–55'–36.47"	
L_{sa}/L_{sb} = 217.00'/217.00'	θ_S = 00°–34'–43.19"	
R = 10743.00'	Δ_C = 01°–46'–10.08"	
L_C = 331.78'	θ_S = 00°–34'–43.19"	
T_S = 382.95'/382.95'	E = 1.28'	
E_a = 0.75"	M = 1.28'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	–0.01"	1.64"
V_{MPH} =	45	45
JERK RATE ENT =	822.28	1.66
JERK RATE EXT =	822.28	1.66

CURVE TA–6 – TRACK A

D_C = 0°–32'–00.00"	Δ_I = 02°–55'–36.47"	
L_{sa}/L_{sb} = 217.00'/217.00'	θ_S = 00°–34'–43.19"	
R = 10743.00'	Δ_C = 01°–46'–10.08"	
L_C = 331.78'	θ_S = 00°–34'–43.19"	
T_S = 382.95'/382.95'	E = 1.28'	
E_a = 0.75"	M = 1.28'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	–0.01"	1.64"
V_{MPH} =	45	45
JERK RATE ENT =	822.28	1.66
JERK RATE EXT =	822.28	1.66

CURVE T3–5 – TRACK 3

D_C = 1°–26'–00.00"	Δ_I = 08°–21'–40.17"	
L_{sa}/L_{sb} = 279.00'/279.00'	θ_S = 01°–59'–58.01"	
R = 3997.48'	Δ_C = 04°–21'–44.14"	
L_C = 304.35'	θ_S = 01°–59'–58.01"	
T_S = 431.75'/431.75'	E = 2.90'	
E_a = 2.50"	M = 2.90'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	–0.01"	2.42"
V_{MPH} =	50	50
JERK RATE ENT =	712.89	1.65
JERK RATE EXT =	712.89	1.65

CURVE T3–6 – TRACK 3

D_C = 1°–26'–00.00"	Δ_I = 08°–21'–40.17"	
L_{sa}/L_{sb} = 279.00'/279.00'	θ_S = 01°–59'–58.01"	
R = 3997.48'	Δ_C = 04°–21'–44.14"	
L_C = 304.35'	θ_S = 01°–59'–58.01"	
T_S = 431.75'/431.75'	E = 2.90'	
E_a = 2.50"	M = 2.90'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	–0.01"	2.42"
V_{MPH} =	50	50
JERK RATE ENT =	712.89	1.65
JERK RATE EXT =	712.89	1.65

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved | Date

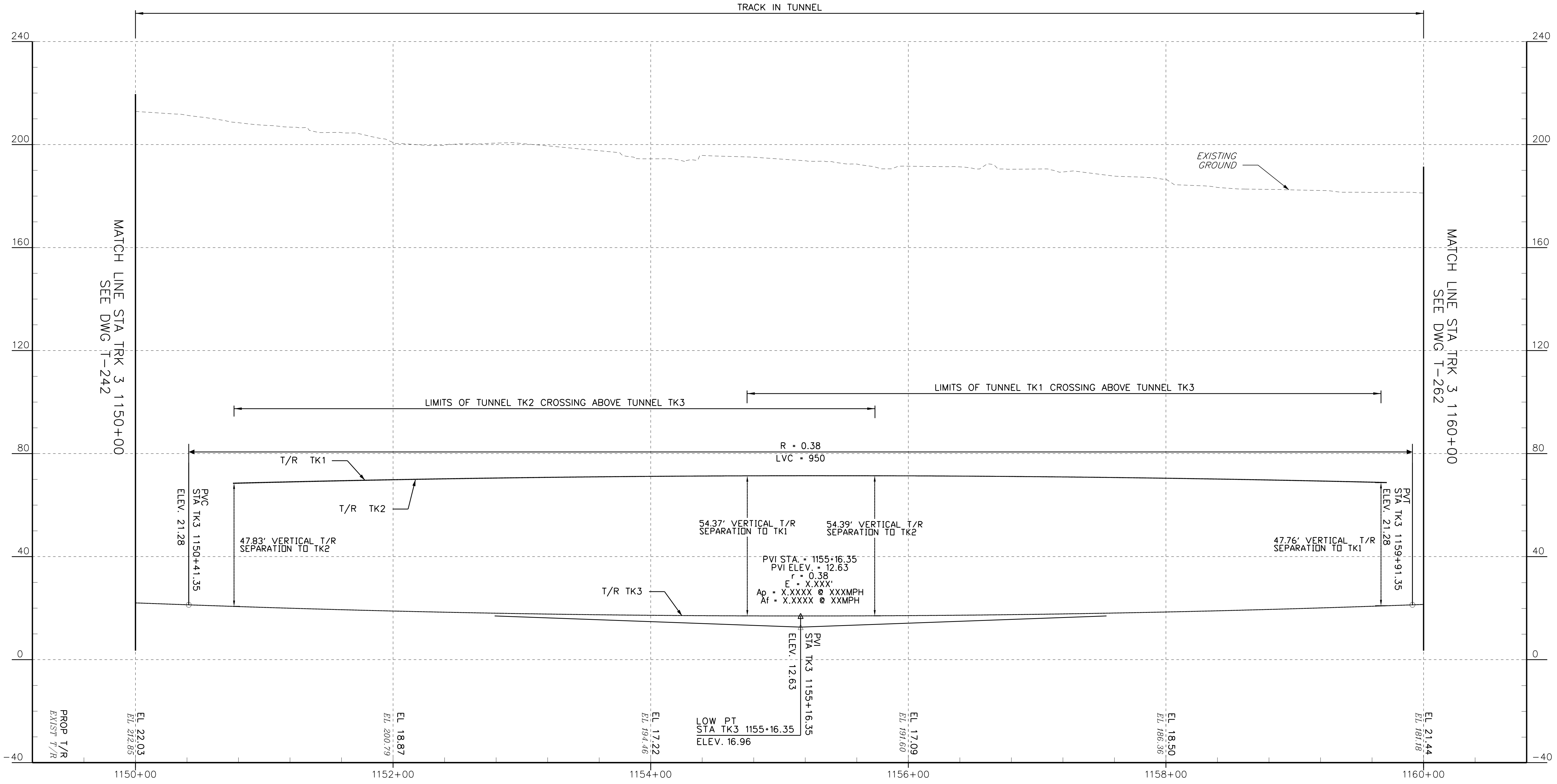
WORK IN PROGRESS

A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL
TRACK PLAN
STA TK2 1150+00 TO STA TK2 1160+00

Designed | Drawn | Checked | Date 09/28/2016

Project No: C.EN.201278
File name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–251



PROFILE – TRACK 3

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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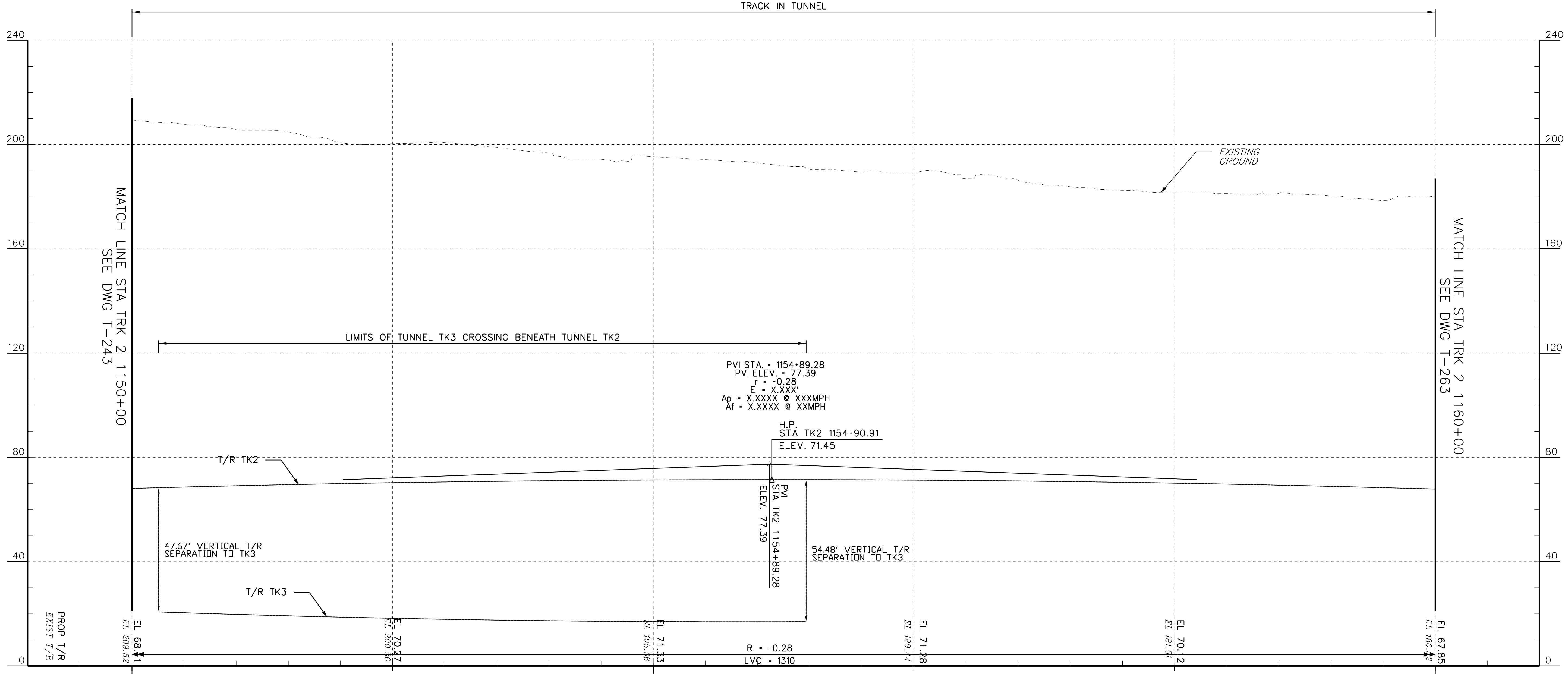
PROFILE – TRACK 3
STA. 1150+00 TO STA. 1160+00

Designed DO	Drawn JB	Checked FB	Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-252



PROFILE – TRACK 2

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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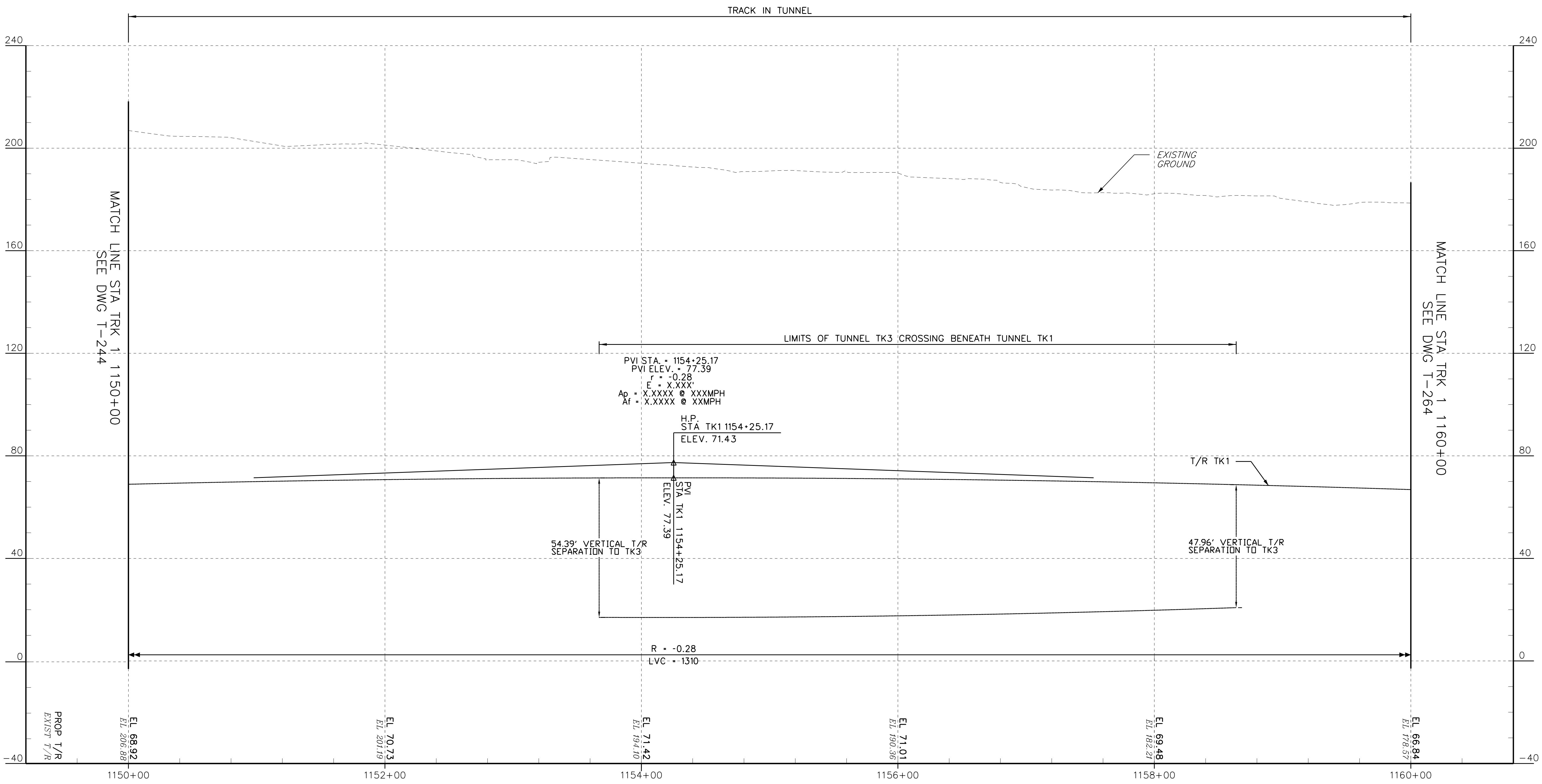
PROFILE – TRACK 2
STA. 1150+00 TO STA. 1160+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-253



PROFILE – TRACK 1

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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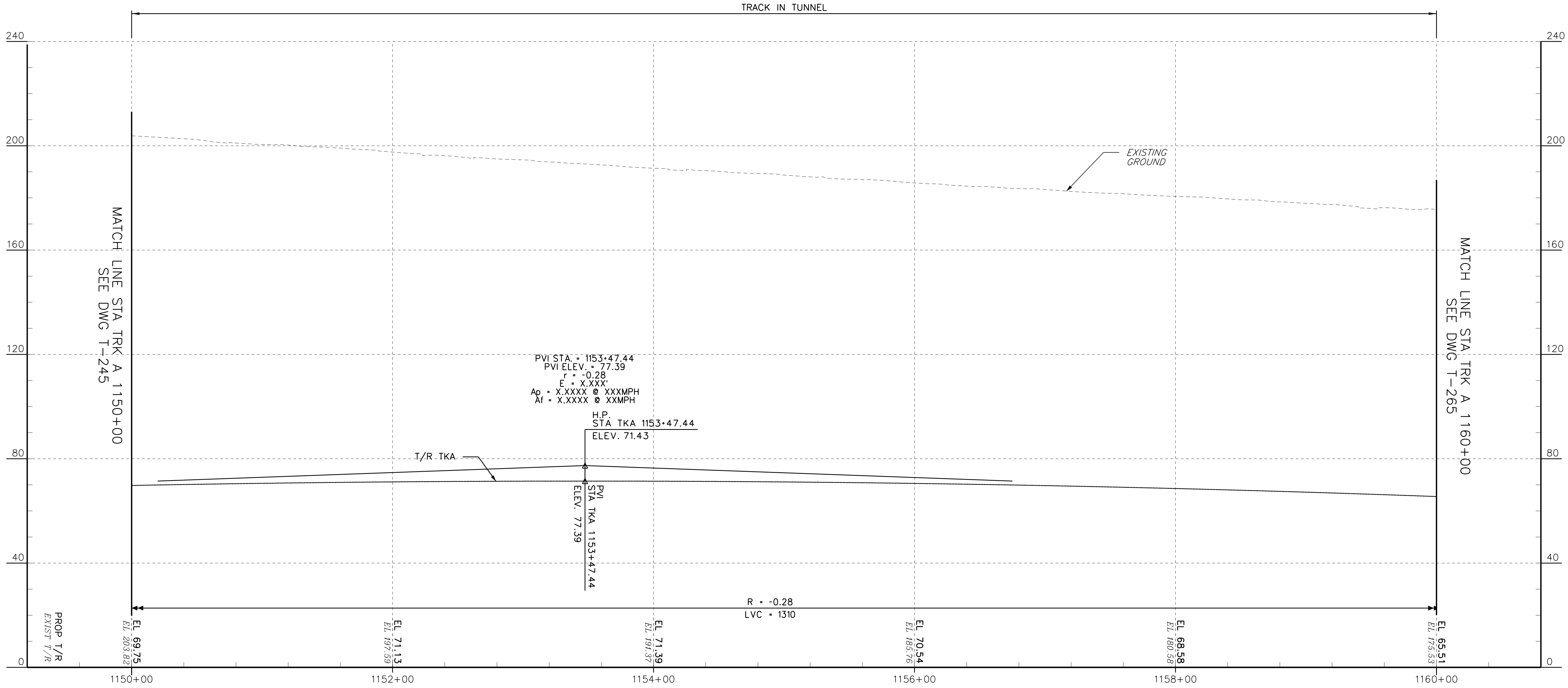
PROFILE – TRACK 1
STA. 1150+00 TO STA. 1160+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-254



PROFILE – TRACK A

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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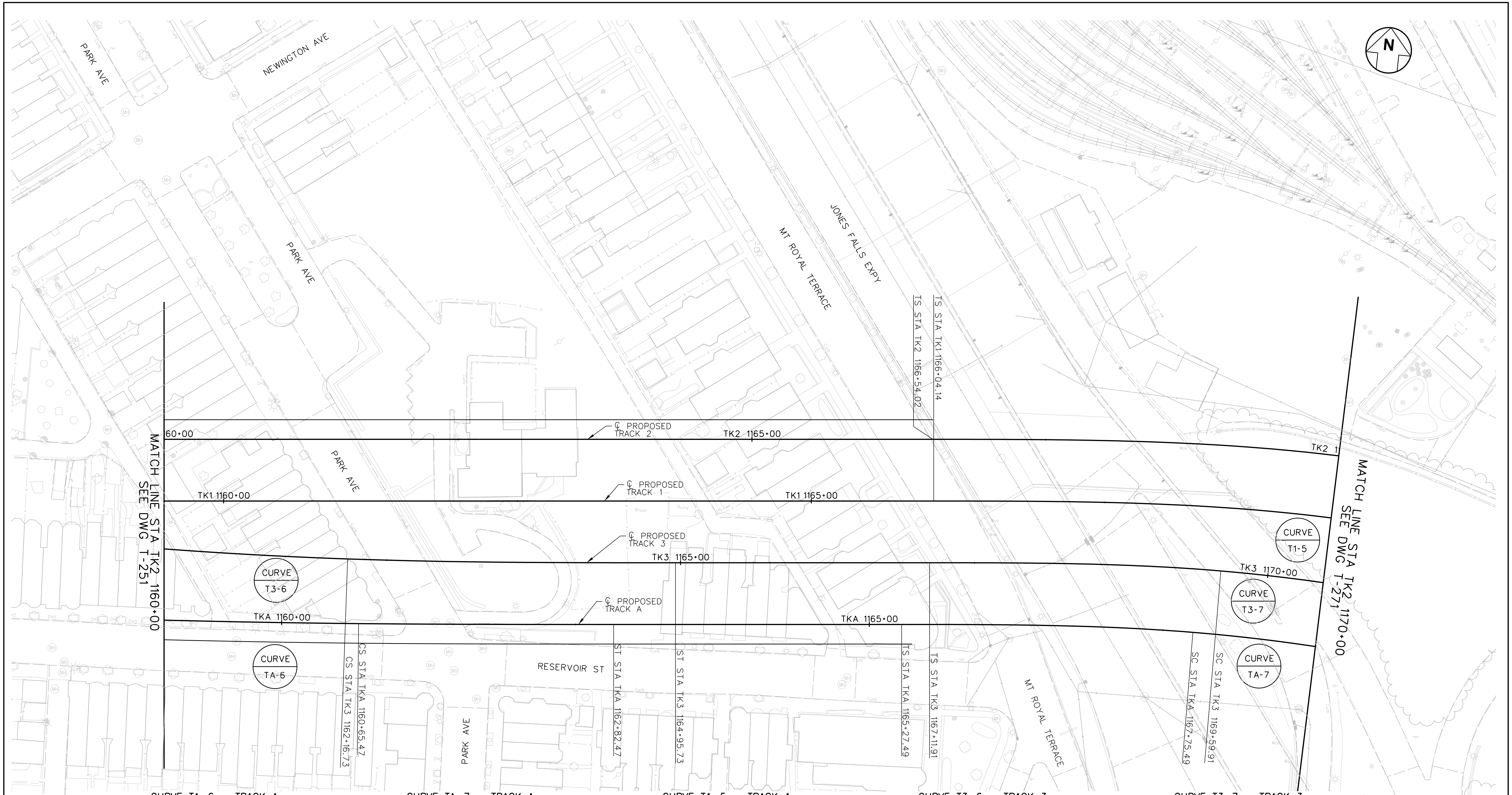
PROFILE – TRACK A
STA. 1150+00 TO STA. 1160+00

Designed DO Drawn JB Checked FB Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–255

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO



CURVE TA-6 – TRACK A

D_C = 0°-32'-00.00"	Δ_I = 02°-55'-36.47"	
L_{sa}/L_{sb} = 217.00'/217.00'	θ_S = 00°-34'-43.19"	
R = 10743.00'	Δ_C = 01°-46'-10.08"	
L_C = 331.78'	θ_S = 00°-34'-43.19"	
T_S = 382.95'/382.95'	E = 1.28'	
E_a = 0.75"	M = 1.28'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-0.01"	1.64"
V_{MPH} =	45	80
JERK RATE ENT =	822.28	1.66
JERK RATE EXT =	822.28	1.66

CURVE TA-7 – TRACK A

D_C = 3°-45'-00.00"	Δ_I = 52°-52'-56.61"	
L_{sa}/L_{sb} = 248.00'/744.00'	θ_S = 04°-38'-57.01"	
R = 1528.16'	Δ_C = 34°-17'-08.56"	
L_C = 914.45'	θ_S = 13°-56'-51.04"	
T_S = 901.55'/1121.93'	E = 71.05'	
E_a = 4.00"	M = 67.89'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	0.20"	2.56"
V_{MPH} =	40	50
JERK RATE ENT =	31.23	1.94
JERK RATE EXT =	93.70	5.81

CURVE T1-5 – TRACK 1

D_C = 4°-20'-00.00"	Δ_I = 52°-52'-56.61"	
L_{sa}/L_{sb} = 341.00'/341.00'	θ_S = 07°-23'-11.66"	
R = 1322.53'	Δ_C = 38°-06'-33.29"	
L_C = 879.65'	θ_S = 07°-23'-11.66"	
T_S = 829.92'/829.92'	E = 76.66'	
E_a = 5.50"	M = 72.46'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-0.65"	3.67"
V_{MPH} =	40	55
JERK RATE ENT =	-13.14	1.69
JERK RATE EXT =	-13.14	1.69

CURVE T3-6 – TRACK 3

D_C = 1°-26'-00.00"	Δ_I = 08°-21'-40.17"	
L_{sa}/L_{sb} = 279.00'/279.00'	θ_S = 01°-59'-58.01"	
R = 3997.48'	Δ_C = 04°-21'-44.14"	
L_C = 304.35'	θ_S = 01°-59'-58.01"	
T_S = 431.75'/431.75'	E = 2.90'	
E_a = 2.50"	M = 2.90'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-0.01"	2.42"
V_{MPH} =	50	50
JERK RATE ENT =	712.89	1.65
JERK RATE EXT =	712.89	1.65

CURVE T3-7 – TRACK 3

D_C = 3°-54'-00.00"	Δ_I = 52°-52'-56.61"	
L_{sa}/L_{sb} = 248.00'/248.00'	θ_S = 04°-50'-06.24"	
R = 1469.41'	Δ_C = 43°-12'-44.13"	
L_C = 1108.22'	θ_S = 04°-50'-06.24"	
T_S = 855.57'/855.57'	E = 111.05'	
E_a = 4.00"	M = 103.24'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	0.37"	2.82"
V_{MPH} =	40	50
JERK RATE ENT =	16.92	1.76
JERK RATE EXT =	16.92	1.76

0 20 40
SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

AMTRAK®

Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

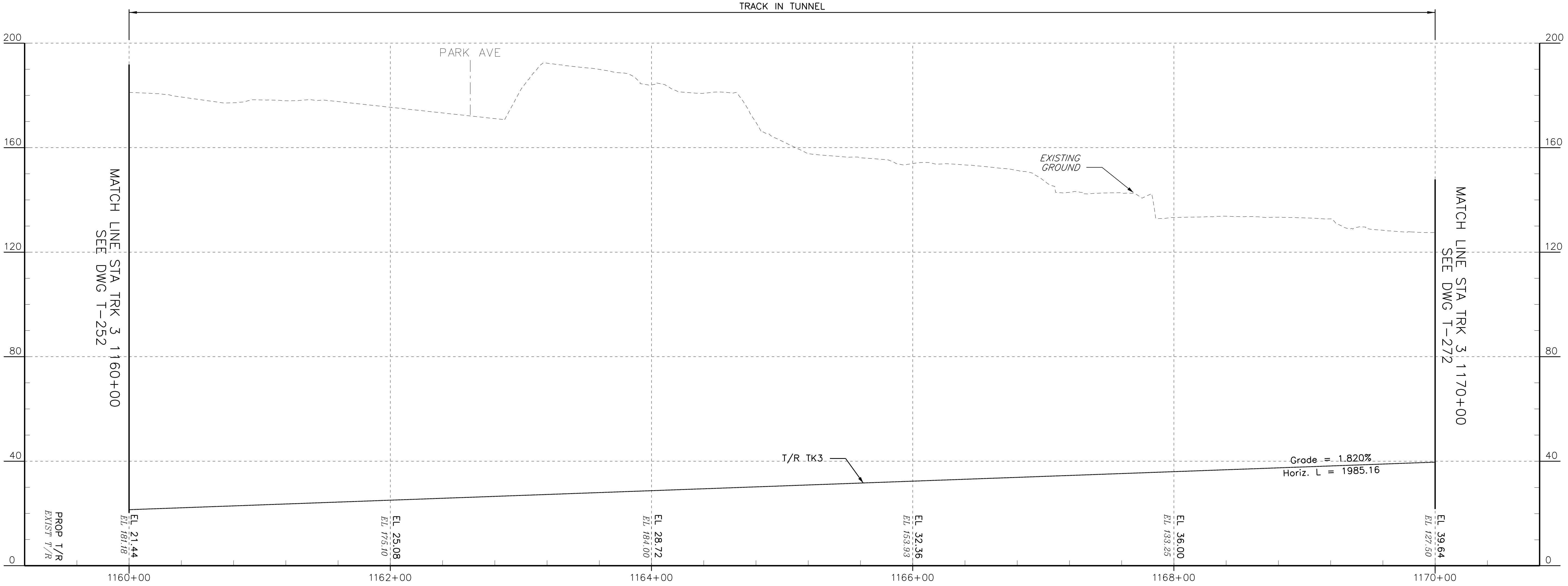
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

TRACK PLAN
STA TK2 1160+00 TO STA TK2 1170+00

Designed | Drawn | Checked | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-261



PROFILE – TRACK 3

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

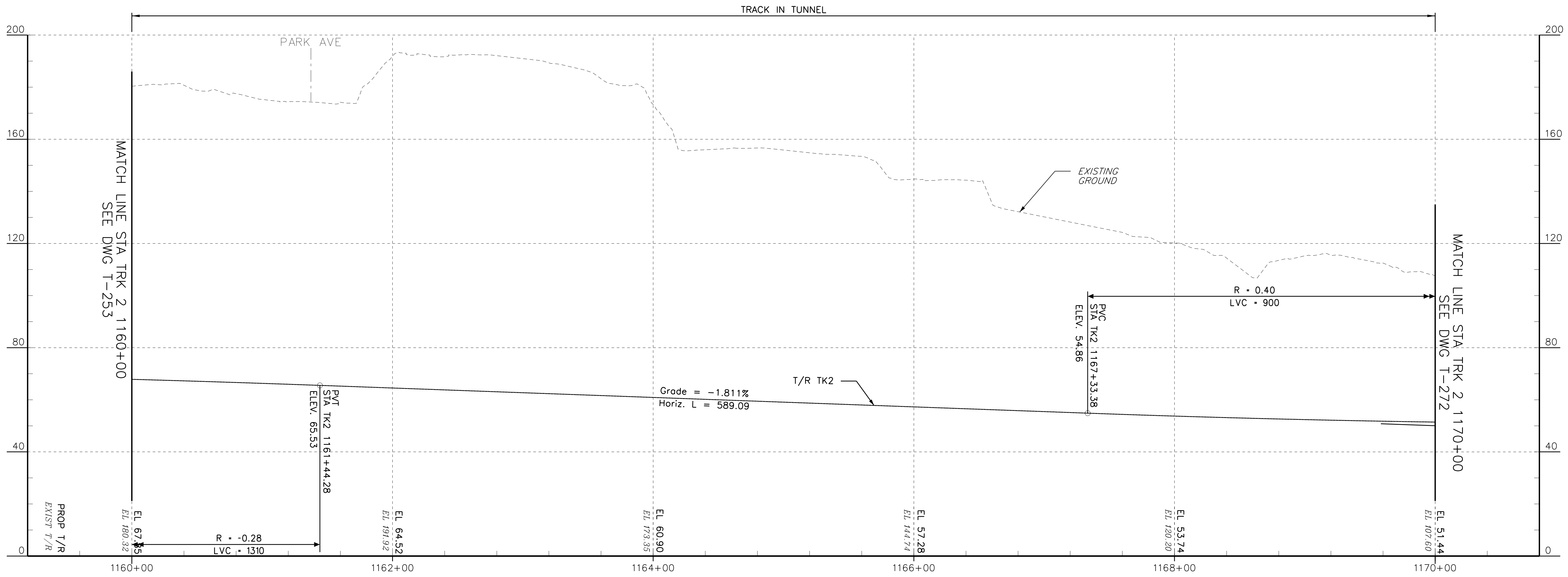
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK 3
STA. 1160+00 TO STA. 1170+00

Designed	DO	Drawn	JB	Checked	FB	Date	09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-262



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved | Date

WORK IN PROGRESS

A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
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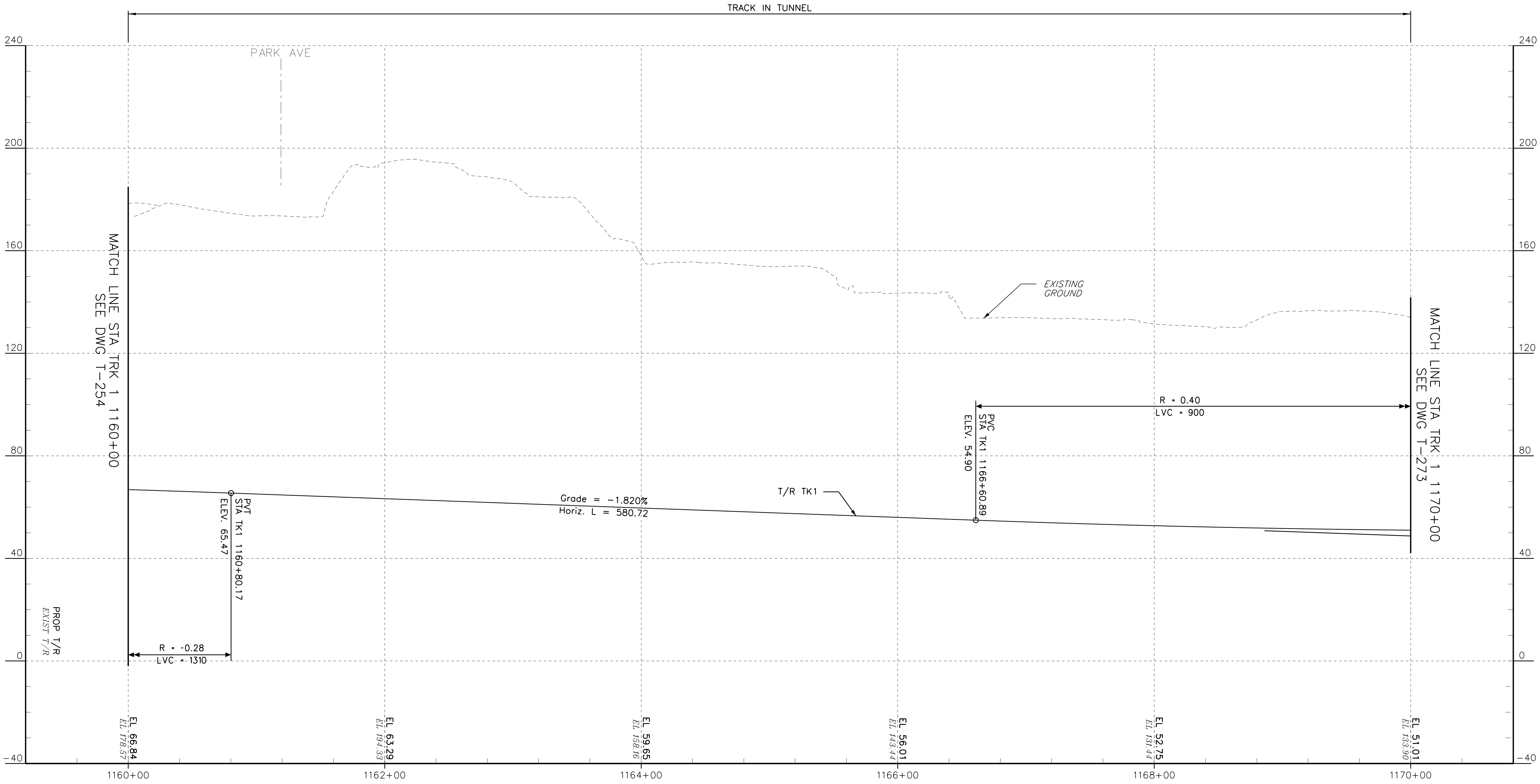
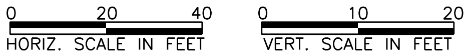
PROFILE – TRACK 2
STA. 1160+00 TO STA. 1170+00

Designed	DO	Drawn	JB	Checked	FB	Date	09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–263



PROFILE – TRACK 1



No.	Revisions	Date	By

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30th Street Station, Philadelphia, Pennsylvania 19104

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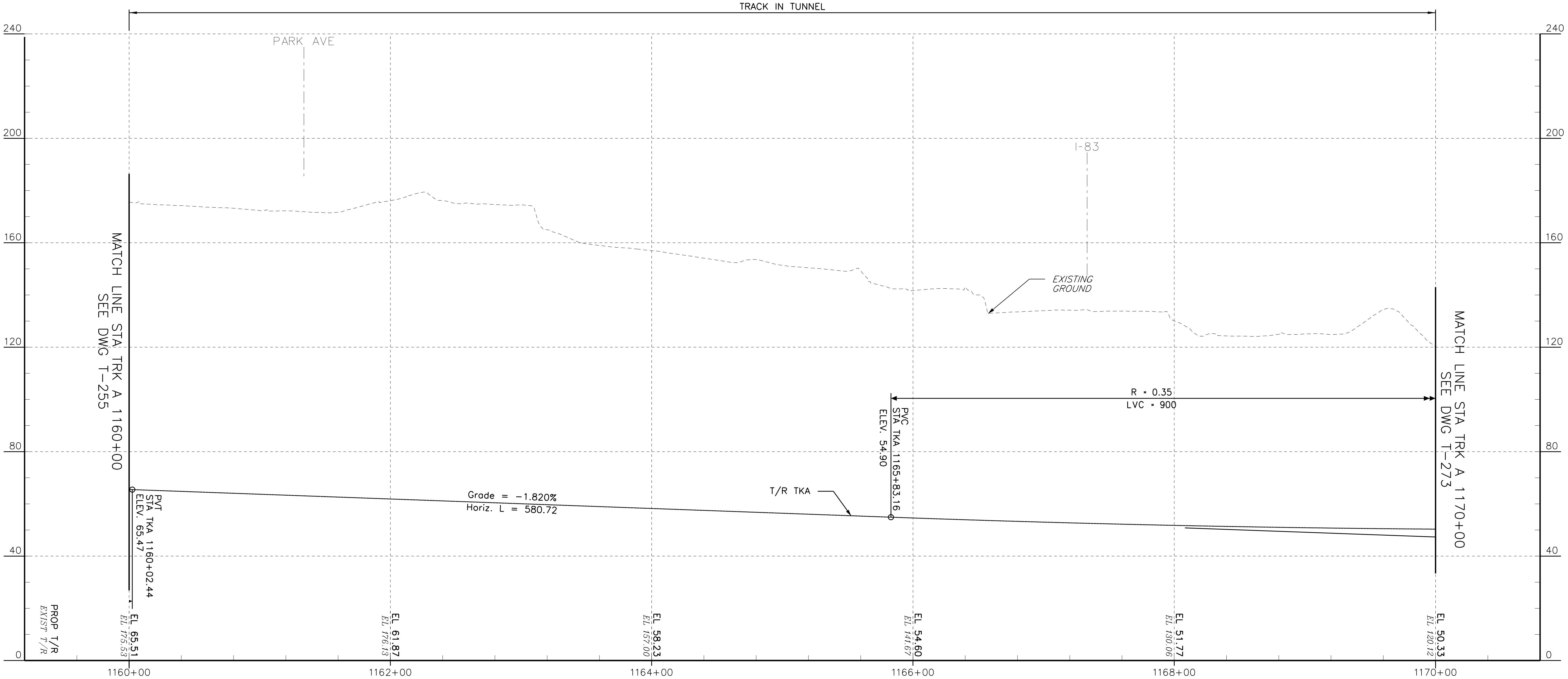
PROFILE – TRACK 1
STA. 1160+00 TO STA. 1170+00

Designed	DO	Drawn	JB	Checked	FB	Date	09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–264

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

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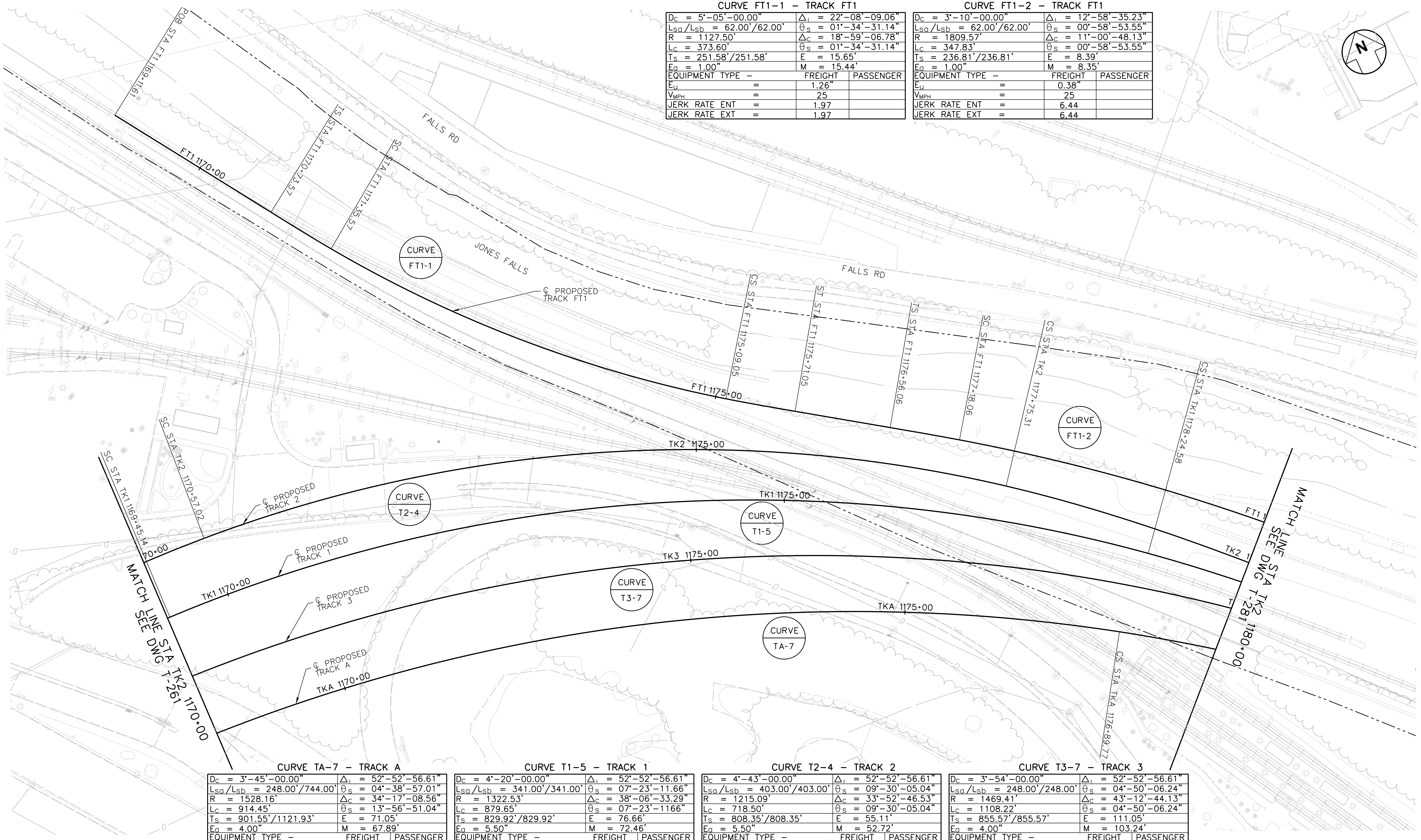
BALTIMORE, MD MPXX
B&P TUNNEL

PROFILE – TRACK A
STA. 1160+00 TO STA. 1170+00

Designed	DO	Drawn	JB	Checked	FB	Date	09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-265



CURVE FT1-1 – TRACK FT1

D_C = 5°-05'-00.00"	Δ_I = 22°-08'-09.06"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_S = 01°-34'-31.14"	
R = 1127.50'	Δ_C = 18°-59'-06.78"	
L_C = 373.60'	θ_S = 01°-34'-31.14"	
T_S = 251.58'/251.58'	E = 15.65'	
E_a = 1.00"	M = 15.44'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	1.26"	
V_{MPH} =	25	
JERK RATE ENT =	1.97	
JERK RATE EXT =	1.97	

CURVE FT1-2 – TRACK FT1

D_C = 3°-10'-00.00"	Δ_I = 12°-58'-35.23"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_S = 00°-58'-53.55"	
R = 1809.57'	Δ_C = 11°-00'-48.13"	
L_C = 347.83'	θ_S = 00°-58'-53.55"	
T_S = 236.81'/236.81'	E = 8.39'	
E_a = 1.00"	M = 8.35'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	0.38"	
V_{MPH} =	25	
JERK RATE ENT =	6.44	
JERK RATE EXT =	6.44	

CURVE TA-7 – TRACK A

D_C = 3°-45'-00.00"	Δ_I = 52°-52'-56.61"	
L_{sa}/L_{sb} = 248.00'/744.00'	θ_S = 04°-38'-57.01"	
R = 1528.16'	Δ_C = 34°-17'-08.56"	
L_C = 914.45'	θ_S = 13°-56'-51.04"	
T_S = 901.55'/1121.93'	E = 71.05'	
E_a = 4.00"	M = 67.89'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	0.20"	2.56"
V_{MPH} =	40	50
JERK RATE ENT =	31.23	1.94
JERK RATE EXT =	93.70	5.81

CURVE T1-5 – TRACK 1

D_C = 4°-20'-00.00"	Δ_I = 52°-52'-56.61"	
L_{sa}/L_{sb} = 341.00'/341.00'	θ_S = 07°-23'-11.66"	
R = 1322.53'	Δ_C = 38°-06'-33.29"	
L_C = 879.65'	θ_S = 07°-23'-1166"	
T_S = 829.92'/829.92'	E = 76.66'	
E_a = 5.50"	M = 72.46'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-0.65"	3.67"
V_{MPH} =	40	55
JERK RATE ENT =	-13.14	1.69
JERK RATE EXT =	-13.14	1.69

CURVE T2-4 – TRACK 2

D_C = 4°-43'-00.00"	Δ_I = 52°-52'-56.61"	
L_{sa}/L_{sb} = 403.00'/403.00'	θ_S = 09°-30'-05.04"	
R = 1215.09'	Δ_C = 33°-52'-46.53"	
L_C = 718.50'	θ_S = 09°-30'-05.04"	
T_S = 808.35'/808.35'	E = 55.11'	
E_a = 5.50"	M = 52.72'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	-0.22"	4.48"
V_{MPH} =	40	55
JERK RATE ENT =	-45.85	1.63
JERK RATE EXT =	-45.85	1.63

CURVE T3-7 – TRACK 3

D_C = 3°-54'-00.00"	Δ_I = 52°-52'-56.61"	
L_{sa}/L_{sb} = 248.00'/248.00'	θ_S = 04°-50'-06.24"	
R = 1469.41'	Δ_C = 43°-12'-44.13"	
L_C = 1108.22'	θ_S = 04°-50'-06.24"	
T_S = 855.57'/855.57'	E = 111.05'	
E_a = 4.00"	M = 103.24'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	0.37"	2.82"
V_{MPH} =	40	50
JERK RATE ENT =	16.92	1.76
JERK RATE EXT =	16.92	1.76

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

AMTRAK®

Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved
Date

WORK IN PROGRESS

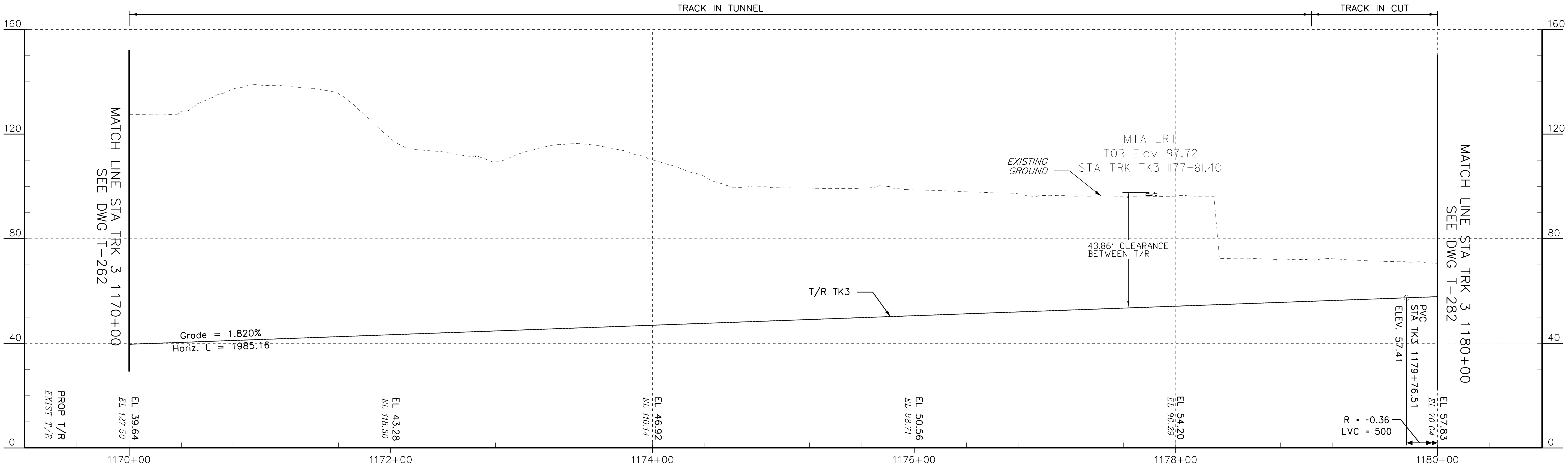
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD
MPXX
B&P TUNNEL

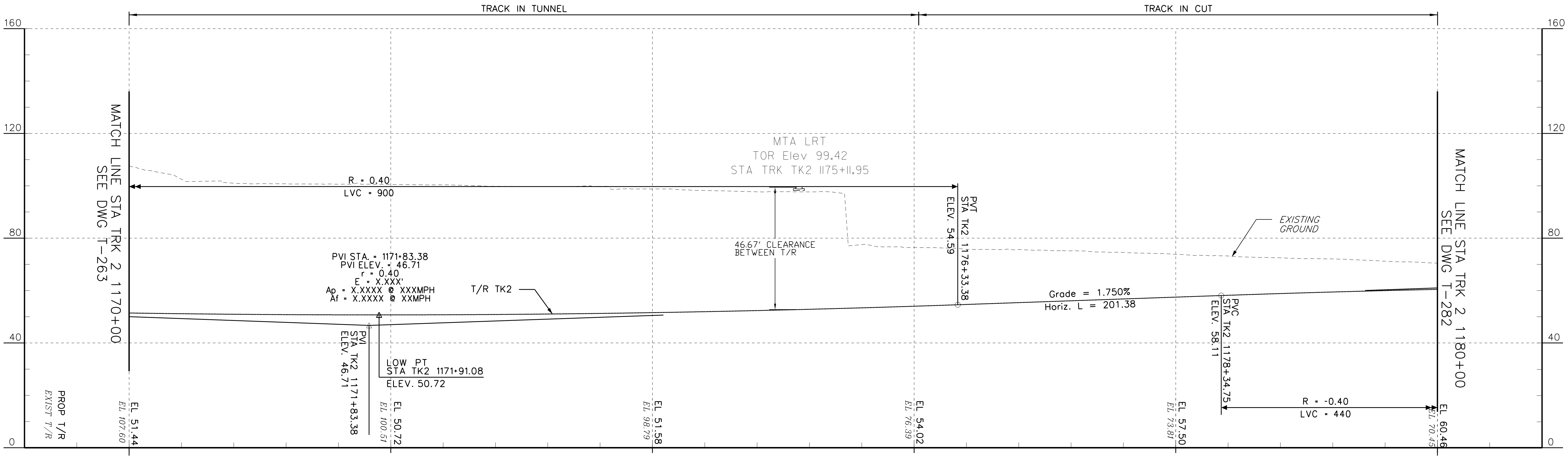
TRACK PLAN
STA TK2 1170+00 TO STA TK2 1180+00

Designed
Drawn
Checked
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-271



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

No.	Revisions	Date	By

AMTRAK

Office of Engineering
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved | Date

WORK IN PROGRESS

A Parsons Brinckerhoff/Parsons Joint Venture

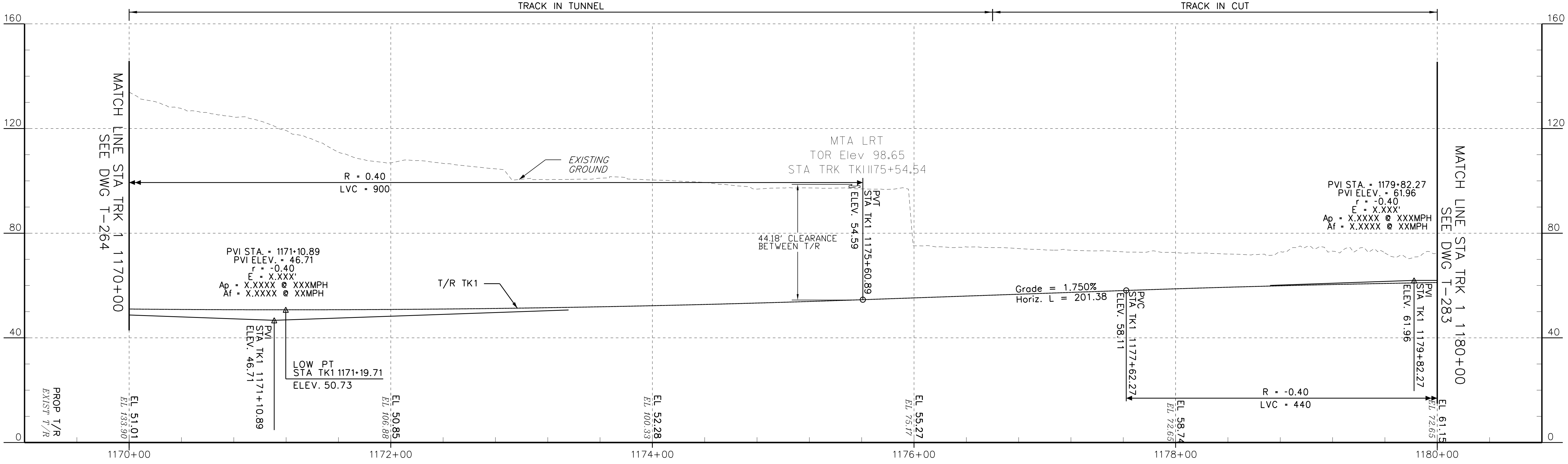
BALTIMORE, MD MPXX
B&P TUNNEL

PROFILES – TRACK 2 & TRACK 3
STA. 1170+00 TO STA. 1180+00

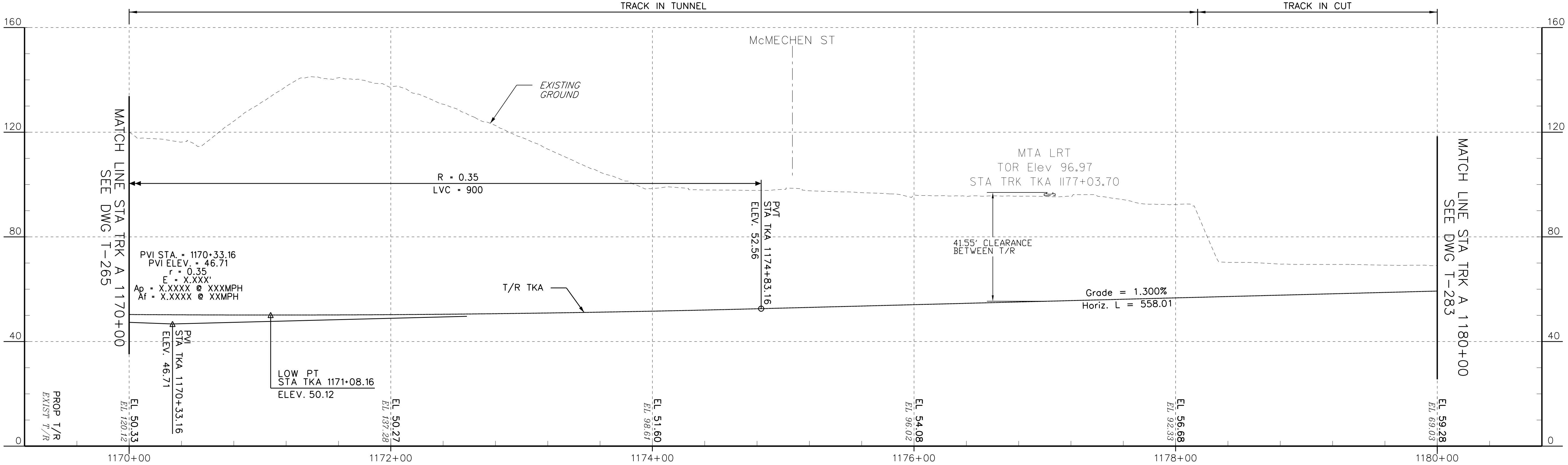
Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No: C.EN.201278
File name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-272

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date
WORK IN PROGRESS	

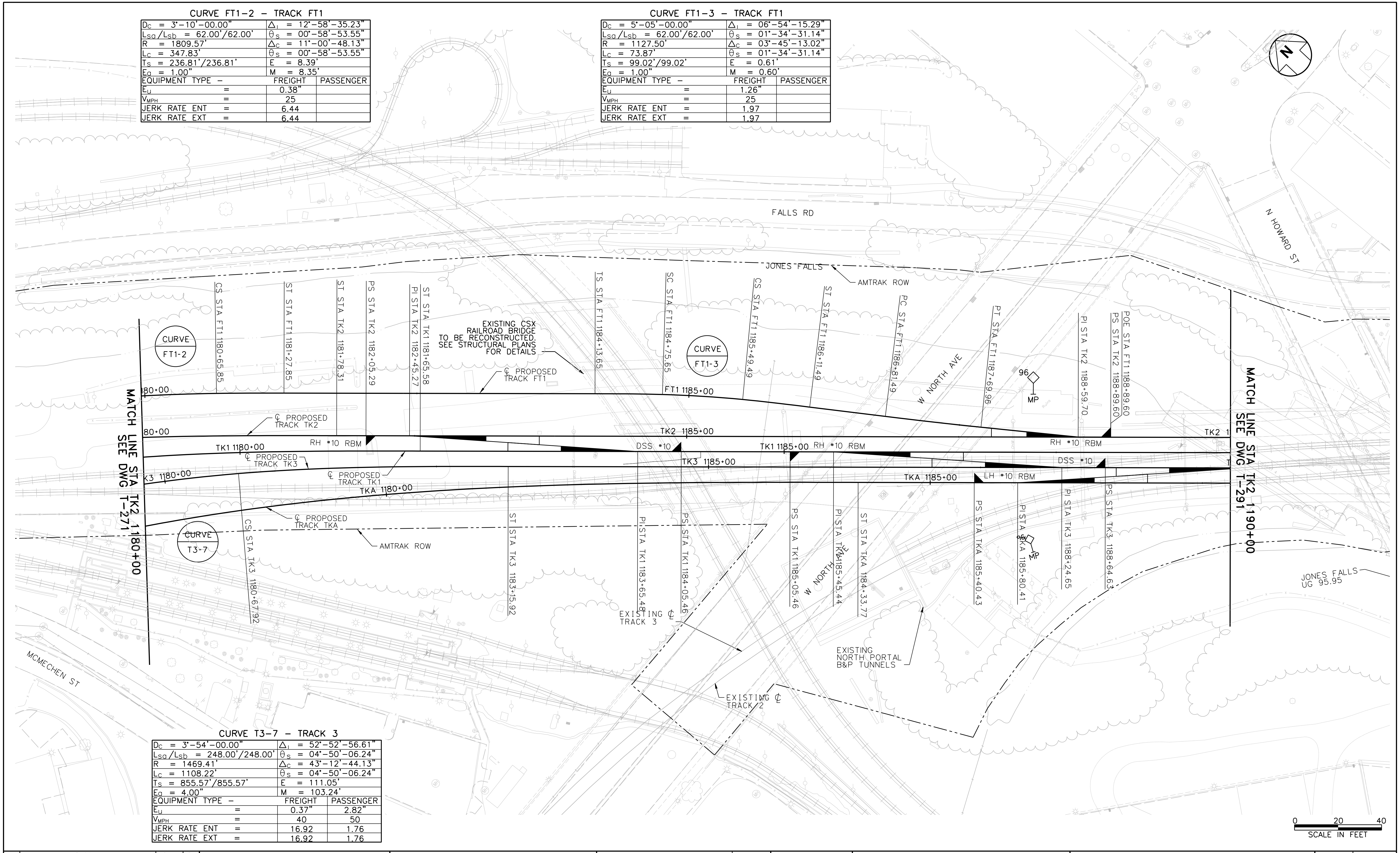
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

PROFILES – TRACK A & TRACK 1
STA. 1170+00 TO STA. 1180+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T-273



CURVE FT1-2 – TRACK FT1

D_c = 3°-10'-00.00"		Δ_i = 12°-58'-35.23"	
L_{sa}/L_{sb} = 62.00'/62.00'		θ_s = 00°-58'-53.55"	
R = 1809.57'		Δ_c = 11°-00'-48.13"	
L_c = 347.83'		θ_s = 00°-58'-53.55"	
T_s = 236.81'/236.81'		E = 8.39'	
E_a = 1.00"		M = 8.35'	
EQUIPMENT TYPE –		FREIGHT	PASSENGER
E_u	=	0.38"	
V_{MPH}	=	25	
JERK RATE ENT	=	6.44	
JERK RATE EXT	=	6.44	

CURVE FT1-3 – TRACK FT1

D_c = 5°-05'-00.00"		Δ_i = 06°-54'-15.29"	
L_{sa}/L_{sb} = 62.00'/62.00'		θ_s = 01°-34'-31.14"	
R = 1127.50'		Δ_c = 03°-45'-13.02"	
L_c = 73.87'		θ_s = 01°-34'-31.14"	
T_s = 99.02'/99.02'		E = 0.61'	
E_a = 1.00"		M = 0.60'	
EQUIPMENT TYPE –		FREIGHT	PASSENGER
E_u	=	1.26"	
V_{MPH}	=	25	
JERK RATE ENT	=	1.97	
JERK RATE EXT	=	1.97	

CURVE T3-7 – TRACK 3

D_c = 3°-54'-00.00"		Δ_i = 52°-52'-56.61"	
L_{sa}/L_{sb} = 248.00'/248.00'		θ_s = 04°-50'-06.24"	
R = 1469.41'		Δ_c = 43°-12'-44.13"	
L_c = 1108.22'		θ_s = 04°-50'-06.24"	
T_s = 855.57'/855.57'		E = 111.05'	
E_a = 4.00"		M = 103.24'	
EQUIPMENT TYPE –		FREIGHT	PASSENGER
E_u	=	0.37"	2.82"
V_{MPH}	=	40	50
JERK RATE ENT	=	16.92	1.76
JERK RATE EXT	=	16.92	1.76

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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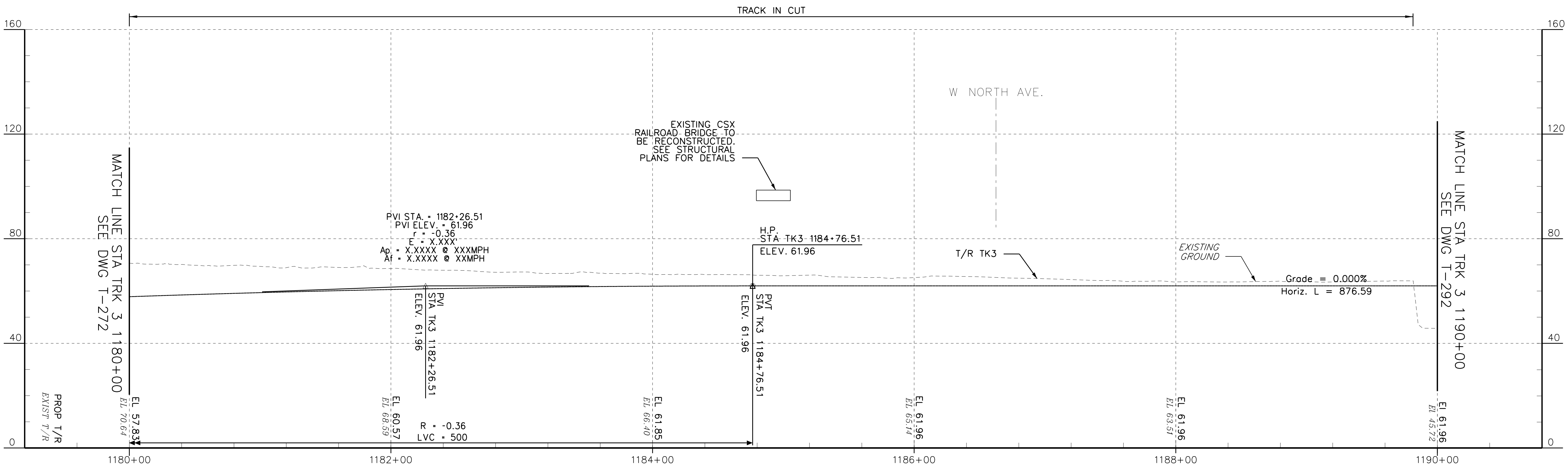
A Parsons Brinckerhoff/Parsons Joint Venture

BALTIMORE, MD MPXX
B&P TUNNEL

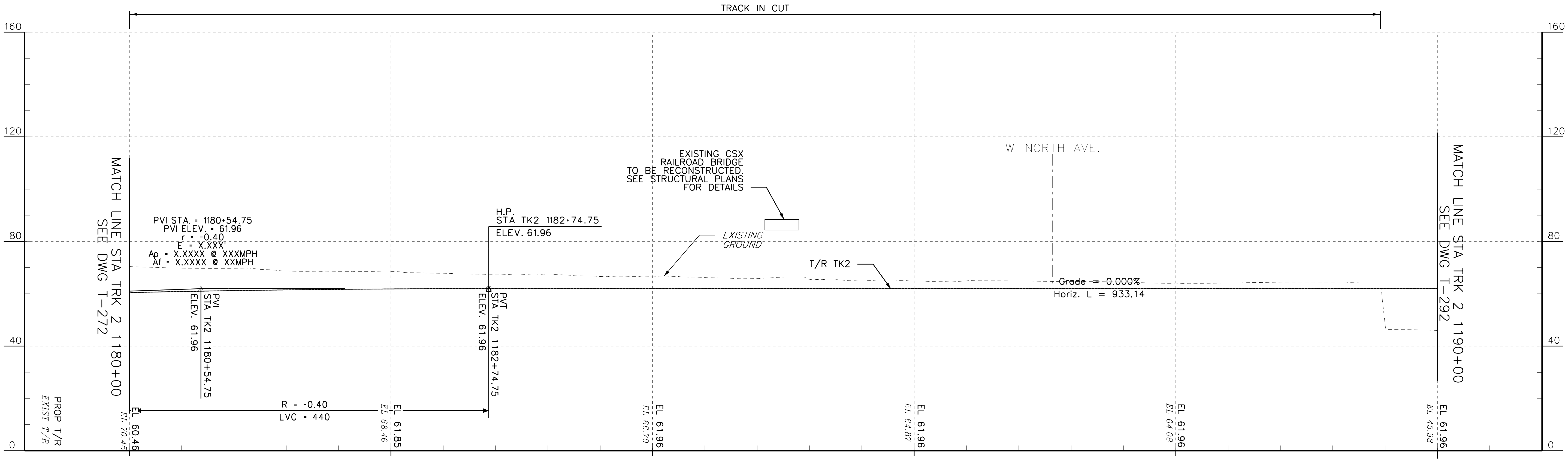
TRACK PLAN
STA TK2 1180+00 TO STA TK2 1190+00

Designed | Drawn | Checked | Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–281



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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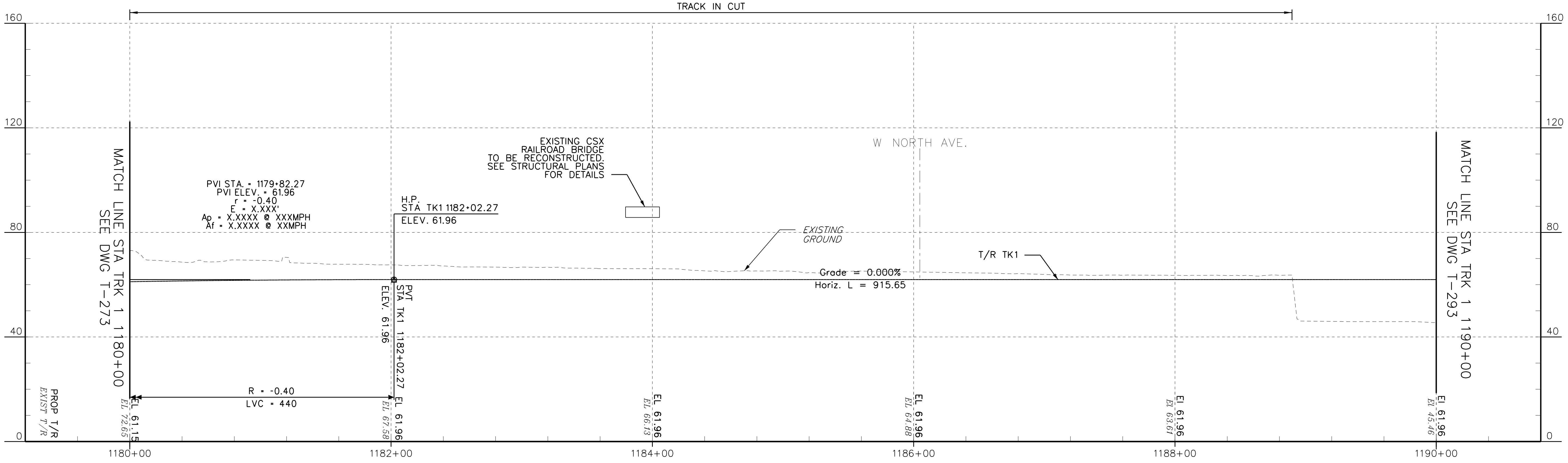
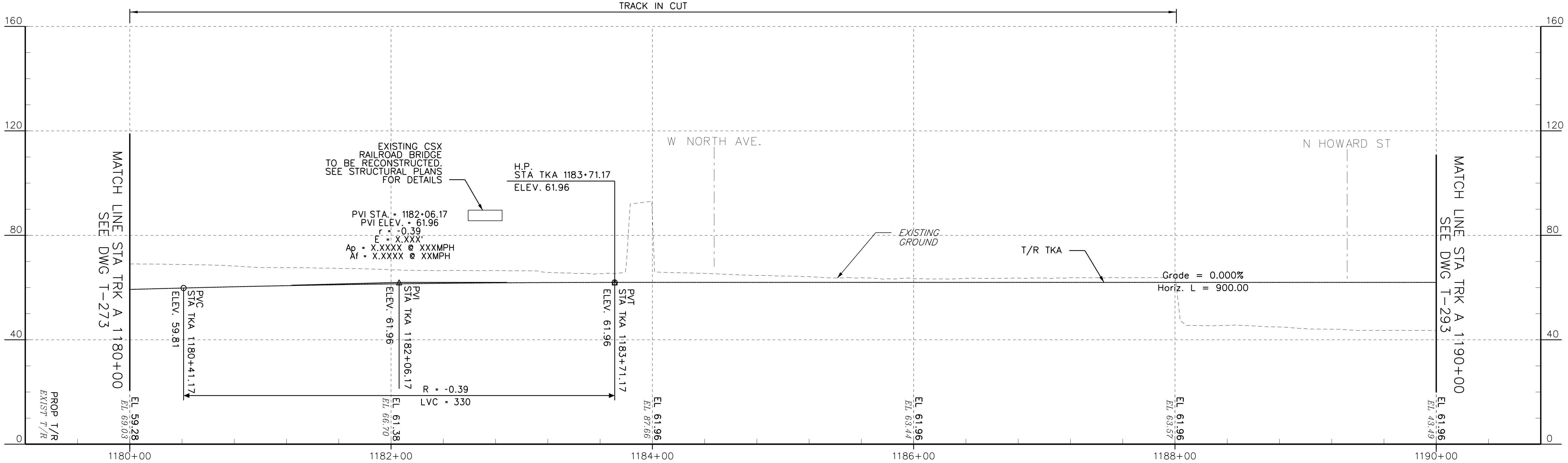
PROFILES – TRACK 2 & TRACK 3
STA. 1180+00 TO STA. 1190+00

Designed DO | Drawn JB | Checked FB | Date 09/28/2016

Project No:	C.EN.201278
file name. No:	XXXXX
Sheet No.	OF XX
Dwg. No.	T–282



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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Office of Engineering

National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved
Date

WORK IN PROGRESS

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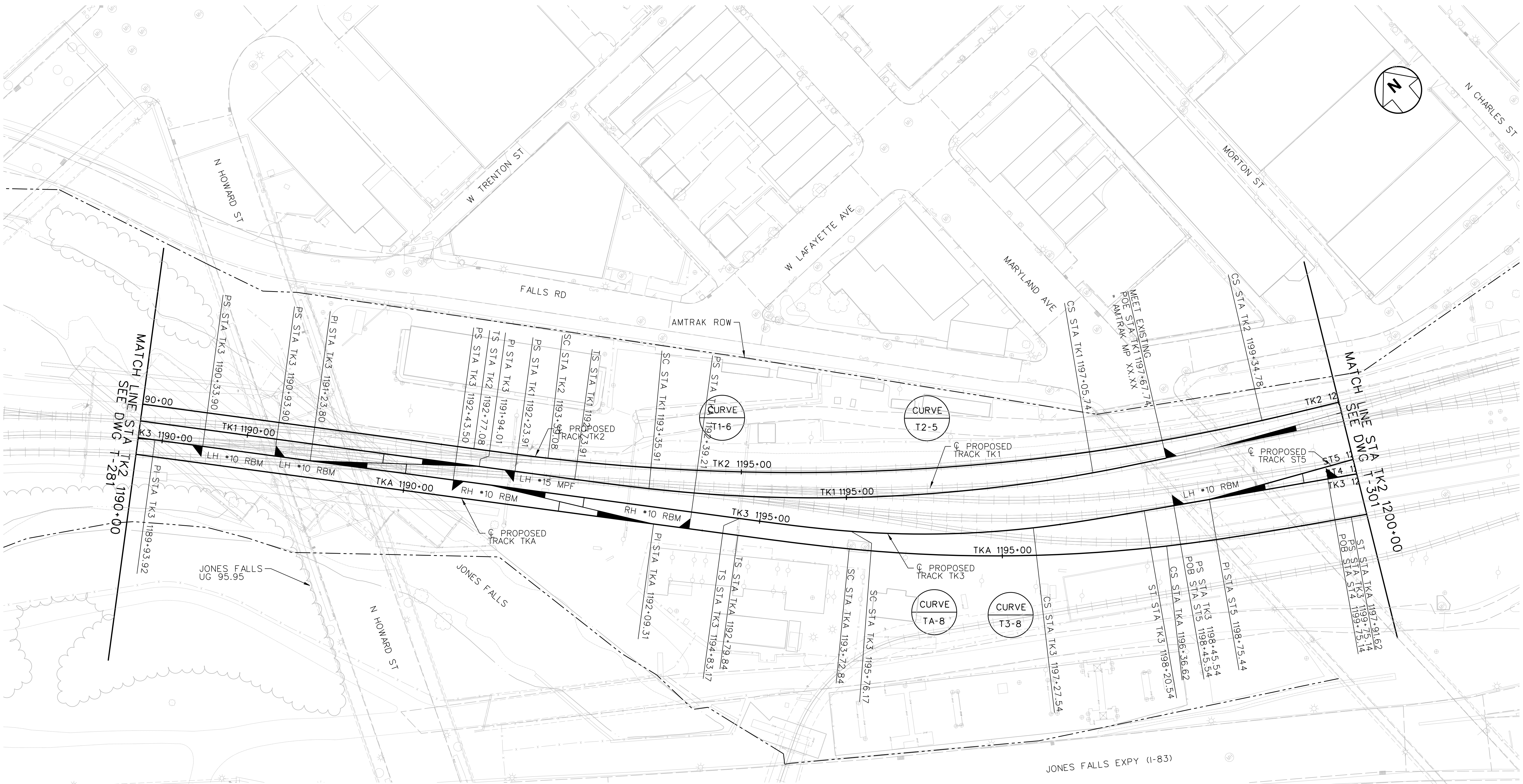
B&P TUNNEL

PROFILES – TRACK A & TRACK 1
STA. 1180+00 TO STA. 1190+00

Designed DO
Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-283



0 20 40
SCALE IN FEET

CURVE TA-8 – TRACK A

D_C = 4°–35'–00.00"	Δ_I = 17°–46'–18.11"	
L_{sa}/L_{sb} = 93.00'/155.00'	θ_S = 02°–07'–50.45"	
R = 1250.42'	Δ_C = 12°–05'–23.57"	
L_C = 263.85'	θ_S = 03°–33'–04.09"	
T_S = 243.72'/271.43'	E = 6.99'	
E_a = 1.50"	M = 6.95'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	1.39"	1.39"
V_{MPH} =	30	30
JERK RATE ENT =	2.24	2.24
JERK RATE EXT =	3.73	3.73

CURVE T1-6 – TRACK 1

D_C = 4°–30'–00.00"	Δ_I = 19°–25'–24.76"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_S = 01°–23'–40.71"	
R = 1273.57'	Δ_C = 16°–38'–03.34"	
L_C = 369.75'	θ_S = 01°–23'–40.71"	
T_S = 248.99'/248.99'	E = 13.54'	
E_a = 1.00"	M = 13.39'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	0.97"	1.83"
V_{MPH} =	25	30
JERK RATE ENT =	2.56	1.13
JERK RATE EXT =	2.56	1.13

CURVE T2-5 – TRACK 2

D_C = 3°–15'–00.00"	Δ_I = 21°–22'–30.85"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_S = 01°–00'–26.51"	
R = 1763.18'	Δ_C = 19°–21'–37.82"	
L_C = 595.79'	θ_S = 01°–00'–26.51"	
T_S = 363.78'/363.78'	E = 25.47'	
E_a = 1.00"	M = 25.11'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	1.05"	1.05"
V_{MPH} =	30	30
JERK RATE ENT =	1.97	1.97
JERK RATE EXT =	1.97	1.97

CURVE T3-8 – TRACK 3

D_C = 7°–10'–00.00"	Δ_I = 17°–30'–31.71"	
L_{sa}/L_{sb} = 93.00'/93.00'	θ_S = 03°–19'–49.18"	
R = 800.00'	Δ_C = 10°–50'–53.35"	
L_C = 151.47'	θ_S = 03°–19'–49.18"	
T_S = 169.76'/169.76'	E = 3.60'	
E_a = 1.50"	M = 3.58'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_u =	1.63"	3.01"
V_{MPH} =	25	30
JERK RATE ENT =	2.28	1.03
JERK RATE EXT =	2.28	1.03

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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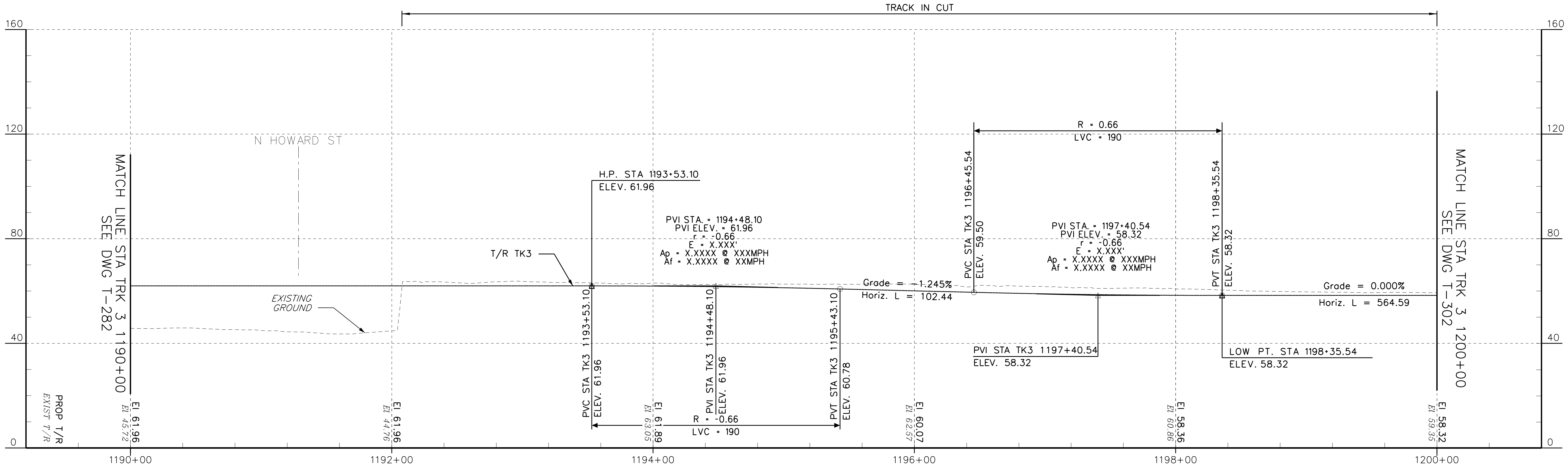
Approved Date
WORK IN PROGRESS

A Parsons Brinckerhoff/Parsons Joint Venture

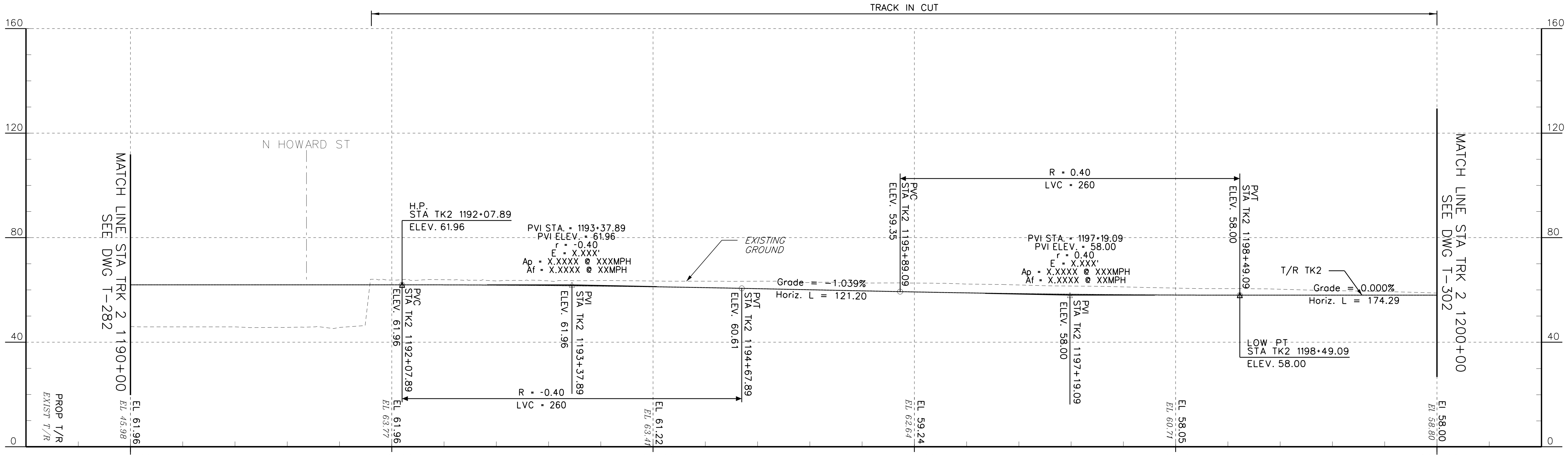
BALTIMORE, MD MPXX
B&P TUNNEL
TRACK PLAN
STA TK2 1190+00 TO STA TK2 1200+00

Designed
Drawn
Checked
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–291



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

No.	Revisions	Date	By

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

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PROFILES – TRACK 2 & TRACK 3
STA. 1190+00 TO STA. 1200+00

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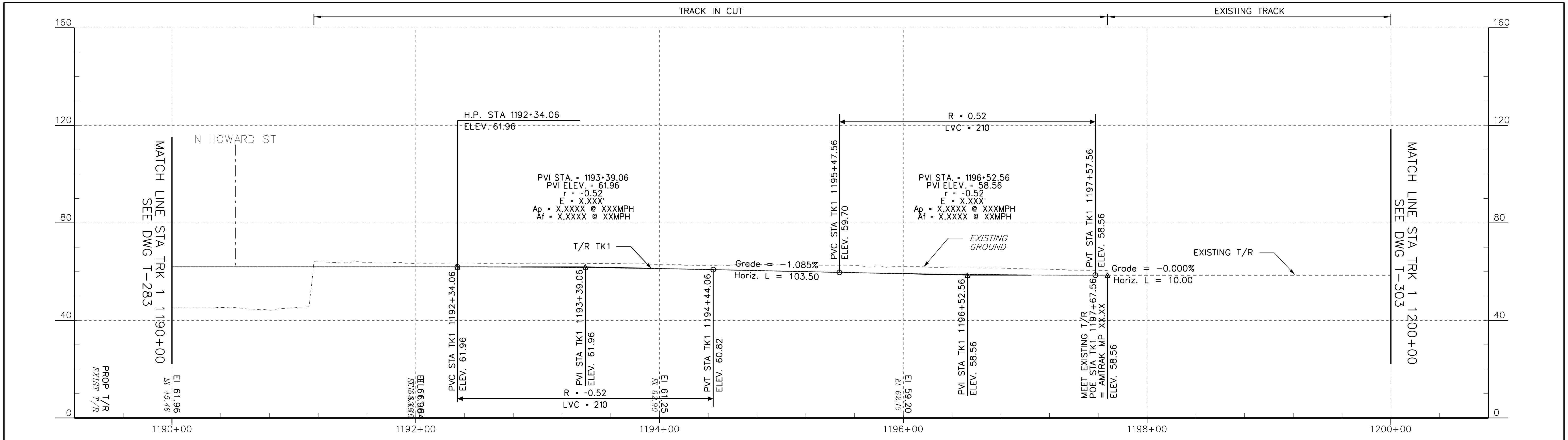
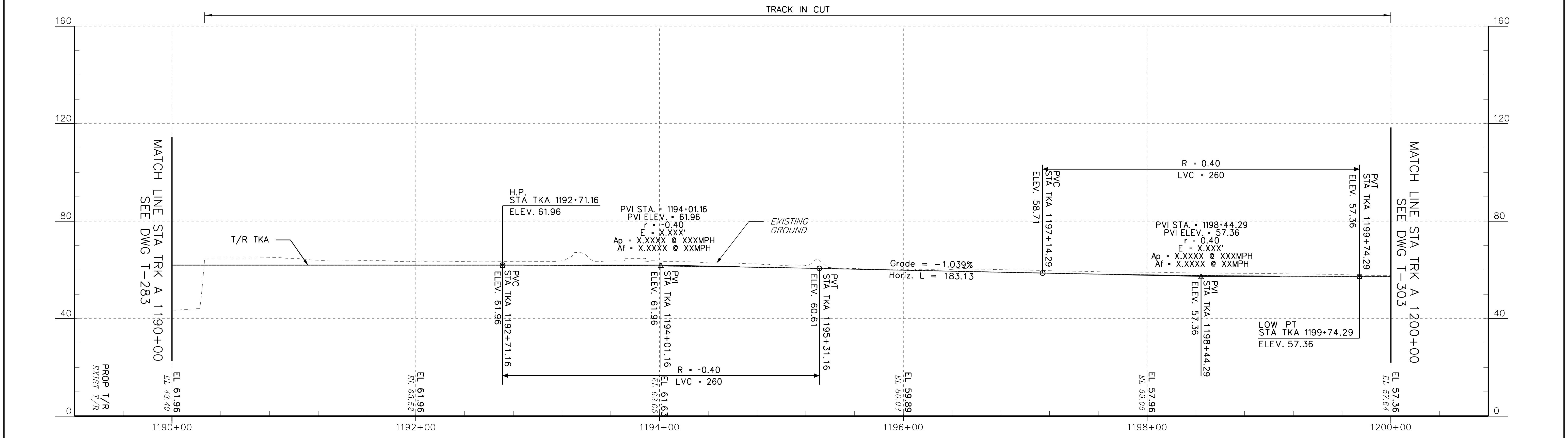
Project No: C.EN.201278
File name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-292



PROFILE – TRACK 1



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

No.	Revisions	Date	By

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MPXX

PROFILES – TRACK A & TRACK 1
STA. 1190+00 TO STA. 1200+00

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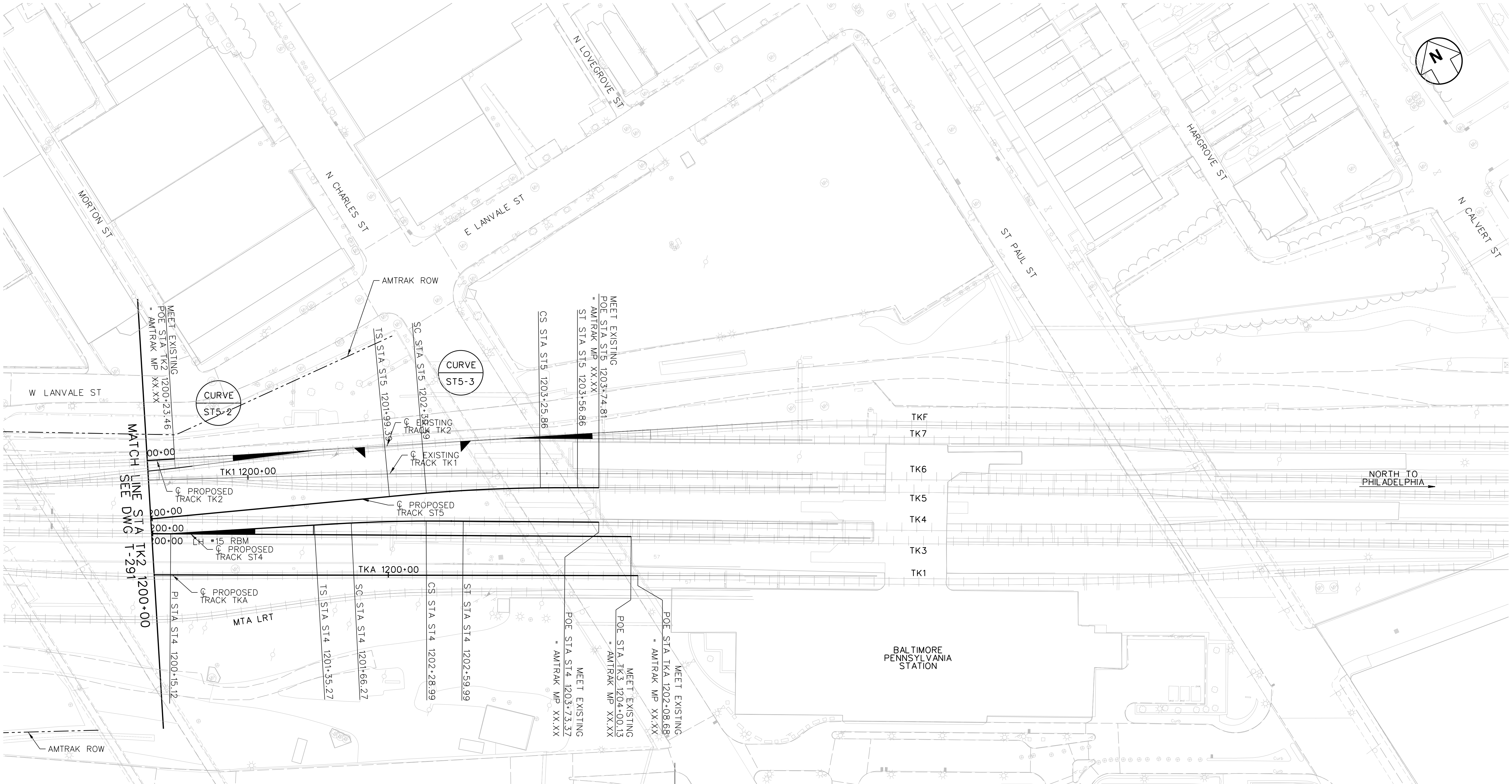
Project No: C.EN.201278
File name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-293

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO



CURVE ST5-2 – TRACK ST5

D_C = 5°-20'-00.00"	Δ_I = 06°-37'-08.47"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_S = 01°-39'-09.85"	
R = 1074.68'	Δ_C = 03°-18'-48.77"	
L_C = 62.15'	θ_S = 01°-39'-09.85"	
T_S = 93.15'/93.15'	E = 0.45'	
E_a = 1.00"	M = 0.45'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	1.33"	1.33"
V_{MPH} =	25	25
JERK RATE ENT =	1.86	1.86
JERK RATE EXT =	1.86	1.86

CURVE ST5-3 – TRACK ST5

D_C = 5°-20'-00.00"	Δ_I = 06°-16'-07.48"	
L_{sa}/L_{sb} = 62.00'/62.00'	θ_S = 01°-39'-09.85"	
R = 1074.68'	Δ_C = 02°-57'-47.77"	
L_C = 55.58'	θ_S = 01°-39'-09.85"	
T_S = 89.86'/89.86'	E = 0.36'	
E_a = 1.00"	M = 0.36'	
EQUIPMENT TYPE –	FREIGHT	PASSENGER
E_U =	1.33"	1.33"
V_{MPH} =	25	25
JERK RATE ENT =	1.86	1.86
JERK RATE EXT =	1.86	1.86

0 20 40
SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

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B&P TUNNEL
TRACK PLAN
STA TK2 1200+00 TO STA TK2 1200+23.46

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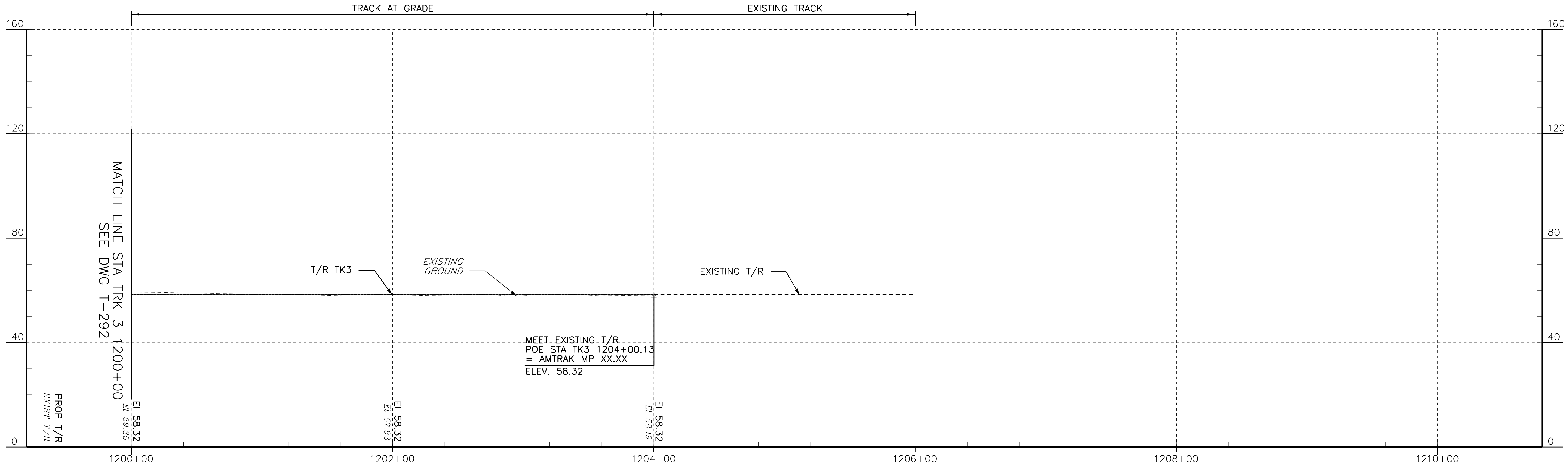
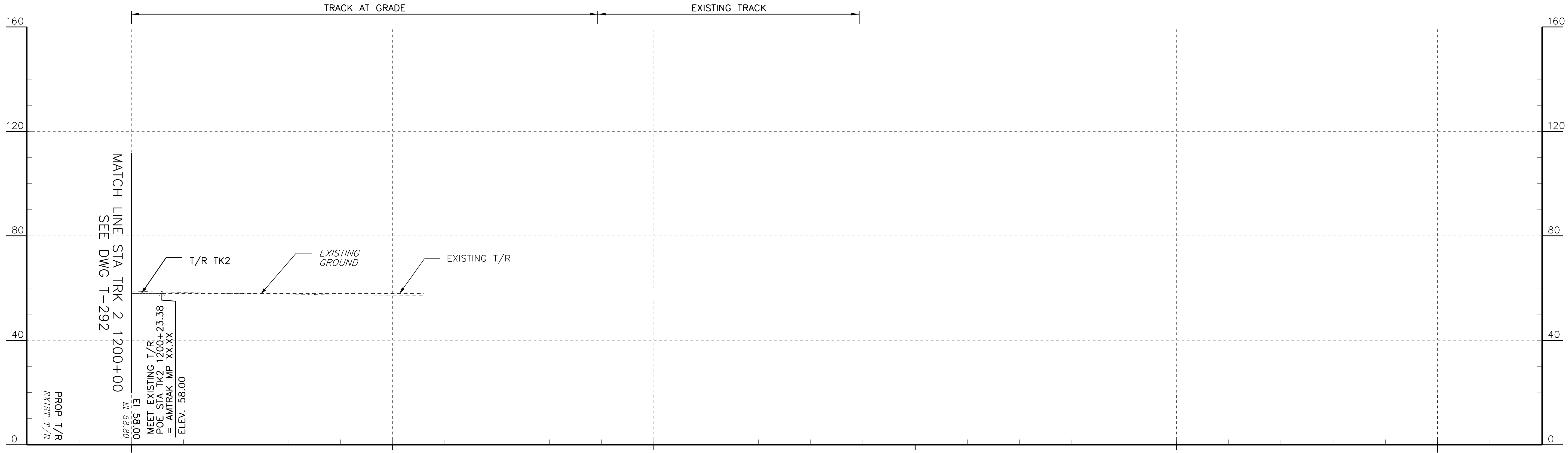
Project No: C.EN.201278
File name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-301



PROFILE – TRACK 3



PROFILE – TRACK 2

0 40 80
HORIZ. SCALE IN FEET

0 20 40
VERT. SCALE IN FEET

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PROFILES – TRACK 2 & TRACK 3
STA. 1200+00 TO STA. 1210+00

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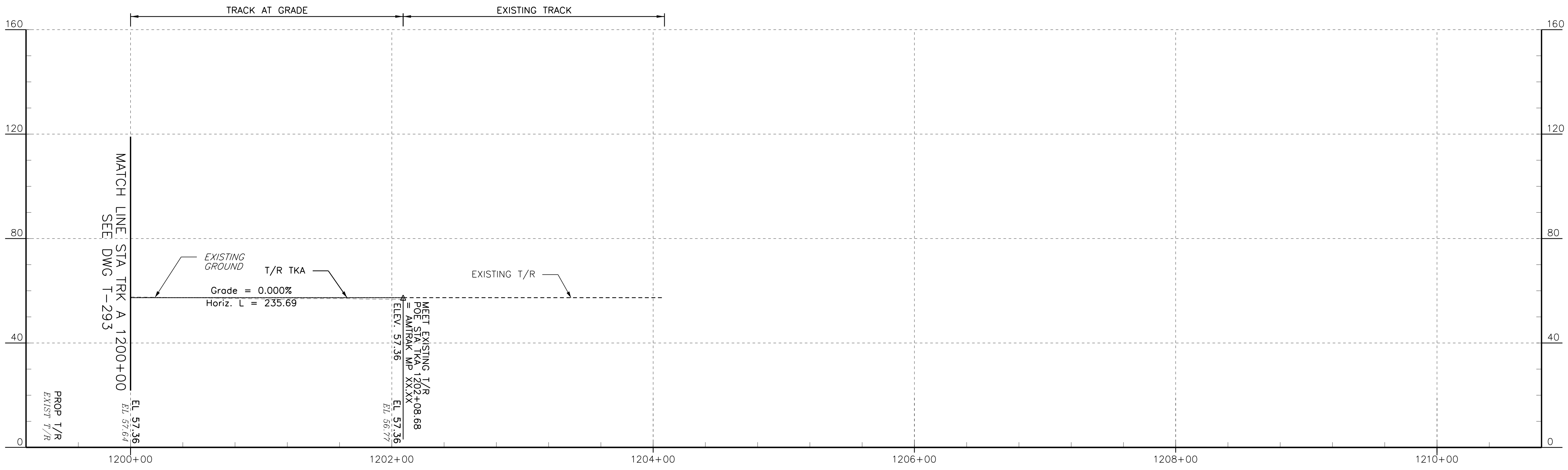
Project No: C.EN.201278
File name. No: XXXXX
Sheet No. OF XX
Dwg. No. T–302

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO



PROFILE – TRACK A

0 20 40
HORIZ. SCALE IN FEET

0 10 20
VERT. SCALE IN FEET

$DATE$ $TIME$
PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

No.	Revisions	Date	By

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B&P TUNNEL

PROFILES – TRACK A & TRACK 1
STA. 1200+00 TO STA. 1210+00

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Drawn JB
Checked FB
Date 09/28/2016

Project No: C.EN.201278
file name. No: XXXXX
Sheet No. OF XX
Dwg. No. T-303